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=> d his ful

     (FILE 'HOME' ENTERED AT 13:14:55 ON 16 DEC 2008)

     FILE 'LREGISTRY' ENTERED AT 13:15:07 ON 16 DEC 2008
L1             STR

     FILE 'REGISTRY' ENTERED AT 13:18:41 ON 16 DEC 2008
L2           0 SEA SSS SAM L1
               D QUE STAT

     FILE 'REGISTRY' ENTERED AT 13:19:13 ON 16 DEC 2008
L3             STR L1

     FILE 'REGISTRY' ENTERED AT 13:22:04 ON 16 DEC 2008
L4          50 SEA SSS SAM L3
               D QUE STAT
L5             SCR 2043

     FILE 'LREGISTRY' ENTERED AT 13:23:38 ON 16 DEC 2008
L6             STR L3

     FILE 'REGISTRY' ENTERED AT 13:25:55 ON 16 DEC 2008
L7          15 SEA SSS SAM L6

     FILE 'LREGISTRY' ENTERED AT 13:26:16 ON 16 DEC 2008
L8             STR L6

     FILE 'REGISTRY' ENTERED AT 13:27:54 ON 16 DEC 2008
L9          50 SEA SSS SAM L8

     FILE 'LREGISTRY' ENTERED AT 13:28:57 ON 16 DEC 2008
L10            STR L8

     FILE 'REGISTRY' ENTERED AT 13:29:40 ON 16 DEC 2008
L11         50 SEA SSS SAM L5 AND L10

     FILE 'HCAPLUS' ENTERED AT 13:31:06 ON 16 DEC 2008
L12          1 SEA ABB=ON  PLU=ON  US20040197632/PN
               D L12 ALL
               SEL L12 RN

     FILE 'REGISTRY' ENTERED AT 13:31:41 ON 16 DEC 2008
L13          8 SEA ABB=ON  PLU=ON  (690247-89-3/BI OR 122325-09-1/BI OR
               663920-23-8/BI OR 663920-24-9/BI OR 690247-88-2/BI OR
               7440-06-4/BI OR 7440-44-0/BI OR 9002-84-0/BI)
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                D SCA
                D QUE STAT
                D QUE STAT
                D QUE STAT L11
                D QUE STAT L11

     FILE 'LREGISTRY' ENTERED AT 13:36:52 ON 16 DEC 2008
L14             STR L10

     FILE 'REGISTRY' ENTERED AT 14:18:02 ON 16 DEC 2008
L15           50 SEA SSS SAM L14
                D SAV
                DEL LEENEWPAR/A
                DEL AHZ303A/A
L16        16442 SEA SSS FUL L14
                SAV TEMP L16 WEI394/A

     FILE 'HCAPLUS' ENTERED AT 14:21:59 ON 16 DEC 2008
L17        10598 SEA ABB=ON  PLU=ON  L16
L18       243501 SEA ABB=ON  PLU=ON  BINDER OR BINDING# (2W) (AGENT#)
L19          259 SEA ABB=ON  PLU=ON  L17 AND L18
L20        39382 SEA ABB=ON  PLU=ON  (CARBON# OR C) (2A) (?PARTICLE? OR
                FLAKE# OR ?SPHERE?)
L21            2 SEA ABB=ON  PLU=ON  L20 AND L19
L22       915823 SEA ABB=ON  PLU=ON  MEMBRANE?
L23         1295 SEA ABB=ON  PLU=ON  L17 AND L22
L24       846378 SEA ABB=ON  PLU=ON  ?ELECTRODE?
L25        13005 SEA ABB=ON  PLU=ON  (CATALYST? OR CAT#) (2A) (LAYER?)
L26         1337 SEA ABB=ON  PLU=ON  L24 (2A) L25
L27          755 SEA ABB=ON  PLU=ON  L22 AND L26
                D L27 1-16 KWIC
                D L27 1-3 HITSTR
L28           19 SEA ABB=ON  PLU=ON  L17 AND L27
L29            4 SEA ABB=ON  PLU=ON  L28 AND (L20 OR L18)


     FILE 'HCAPLUS' ENTERED AT 14:53:32 ON 16 DEC 2008
L30         6502 SEA ABB=ON  PLU=ON  MG(W)CM2
L31        29986 SEA ABB=ON  PLU=ON  NOBLE? (2A) ?METAL?
L32      1631643 SEA ABB=ON  PLU=ON  CAT# OR CATAL?

     FILE 'REGISTRY' ENTERED AT 14:55:30 ON 16 DEC 2008
L33            1 SEA ABB=ON  PLU=ON  7440-06-4/RN
                E RHODIUM/CN
L34            1 SEA ABB=ON  PLU=ON  RHODIUM/CN
                E RUTHENIUM/CN
L35            1 SEA ABB=ON  PLU=ON  RUTHENIUM/CN
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                E PALLADIUM/CN
L36           1 SEA ABB=ON  PLU=ON  PALLADIUM/CN
                E GOLD/CN
L37           1 SEA ABB=ON  PLU=ON  GOLD/CN

     FILE 'HCAPLUS' ENTERED AT 14:57:46 ON 16 DEC 2008
L38      164877 SEA ABB=ON  PLU=ON  ((L33 OR L34 OR L35 OR L36 OR L37)
                OR GOLD# OR AU# OR PD# OR PALLADIUM# OR PLATINUM# OR
                RHODIUM# OR RH# OR RUTHENIUM# OR RU#) (3A) (L32)
L39        5921 SEA ABB=ON  PLU=ON  L31 (2A) L32
L40         254 SEA ABB=ON  PLU=ON  L38 AND L30
L41          19 SEA ABB=ON  PLU=ON  L39 AND L30
                D L40 1-10 KWIC
L42        1183 SEA ABB=ON  PLU=ON  ("0.1" OR "0.2" OR "0.3" OR "0.4" OR
                "0.5" OR "0.6" OR "0.7" OR "0.8" OR "0.9" OR "1.0") (2A)
                (L30)
L43           4 SEA ABB=ON  PLU=ON  L42 AND L39
                D L43 1-4 KWIC
L44          87 SEA ABB=ON  PLU=ON  L38 AND L42
                D L44 1-4 KWIC
L45           0 SEA ABB=ON  PLU=ON  L17 AND (L43 OR L44)
L46          47 SEA ABB=ON  PLU=ON  (L40 OR L41) AND (CARBON# (W) BLACK#
                OR L20)
                D L46 1-8 KWIC
L47          11 SEA ABB=ON  PLU=ON  (L40 OR L41) AND (L20)
                SAV TEMP L17 WEI394B/A
L48       52689 SEA ABB=ON  PLU=ON  (100) (2A) (NM# OR NANOMET? OR
                NANO(W)MET?)
                D L48 1-13 KWIC
L49      163224 SEA ABB=ON  PLU=ON  (10 OR 20 OR 30 OR 40 OR 50 OR 60 OR
                70 OR 80 OR 90) (2A) (NM# OR NANOMET? OR NANO(W)MET?)
L50         287 SEA ABB=ON  PLU=ON  (L48 OR L49) (2A) (L20)
L51           0 SEA ABB=ON  PLU=ON  L17 AND L50
L52       39787 SEA ABB=ON  PLU=ON  ?DIFFUS? (2A) ?LAYER?
L53        1409 SEA ABB=ON  PLU=ON  L24 (2A) L52
L54           0 SEA ABB=ON  PLU=ON  L53 AND L17
L55          25 SEA ABB=ON  PLU=ON  L52 AND L17
                D L55 1-6 KWIC
L56           5 SEA ABB=ON  PLU=ON  L55 AND L26
                SAV TEMP L56 WEI394D/A
                D SAV
                SAV TEMP L41 WEI394E/A
                SAV TEMP L47 WEI394F/A
                D QUE STAT L16
                D L41 1-19 BIB ABS HITIND HITSTR
                D L47 1-11 BIB ABS HITIND HITSTR
                D L56 1-5 BIB ABS HITIND HITSTR
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                SAV TEMP L28 WEI394E/A
                D L28 HITSTR
L57           0 SEA ABB=ON  PLU=ON  (L40 OR L41) AND L17
L58          59 SEA ABB=ON  PLU=ON  (L38 OR L39) AND L17
L59           0 SEA ABB=ON  PLU=ON  L58 AND L42
L60           0 SEA ABB=ON  PLU=ON  L58 AND L30
                D L58 HITSTR
                D L58 1-3 KWIC
L61           2 SEA ABB=ON  PLU=ON  L58 AND L20
                D L61 1-2 KWIC
                D HITSTR L61
                SAV TEMP L61 WEI394F/A


     FILE HOME

     FILE LREGISTRY
     LREGISTRY IS A STATIC LEARNING FILE

     NEW CAS INFORMATION USE POLICIES, ENTER HELP USAGETERMS FOR DETAILS.

     FILE REGISTRY
     Property values tagged with IC are from the ZIC/VINITI data file
     provided by InfoChem.

     STRUCTURE FILE UPDATES:   15 DEC 2008  HIGHEST RN 1084993-68-9
     DICTIONARY FILE UPDATES:  15 DEC 2008  HIGHEST RN 1084993-68-9

     New CAS Information Use Policies, enter HELP USAGETERMS for details.

     TSCA INFORMATION NOW CURRENT THROUGH July 5, 2008.

       Please note that search-term pricing does apply when
       conducting SmartSELECT searches.

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     predicted properties as well as tags indicating availability of
     experimental property data in the original document.  For informatio
     on property searching in REGISTRY, refer to:

     http://www.cas.org/support/stngen/stndoc/properties.html

     FILE HCAPLUS

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FILE COVERS 1907 - 16 Dec 2008 VOL 149 ISS 25
FILE LAST UPDATED: 15 Dec 2008 (20081215/ED)

HCAplus now includes complete International Patent Classification (I
reclassification data for the third quarter of 2008.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

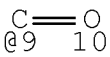
FILE LCA
LCA IS A STATIC LEARNING FILE

THIS FILE CONTAINS CAS REGISTRY NUMBERS FOR EASY AND ACCURATE
SUBSTANCE IDENTIFICATION.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que stat l16
L14 STR



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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE
L16 16442 SEA FILE=REGISTRY SSS FUL L14

100.0% PROCESSED 494137 ITERATIONS 16442 ANSWERS
SEARCH TIME: 00.00.08

I

=> d l28 1-19 bib abs hitstr hitind

L28 ANSWER 1 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:1279124 HCAPLUS Full-text
DN 149:497033
TI membrane-electrode assembly, its manufacturing method, and polymer electrolyte fuel cell
IN Matsumoto, Yuka; Shimoyama, Naoki; Kitai, Masayuki
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 16pp.

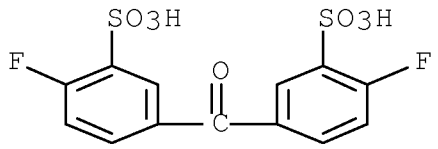
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008258155	A	20081023	JP 2008-63826	200803 13
PRAI JP 2007-64501	A	20070314		

AB The invention relates to a membrane-electrode assembly of a polymer electrolyte fuel cell, comprising an anode electrode having a catalyst layer formed on an electrode substrate, the catalyst layer comprising metal particles, metal-supported particles, and polymer binders, wherein the weight ratio of the metal particle and the metal-supported particle to the polymer binder is 4/1 - 10/1, in order to enhance the catalytic reaction field.

IT 210531-45-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(membrane-electrode assembly for polymer electrolyte fuel cell)

RN 210531-45-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2) (CA INDEX NAME)



●2 Na

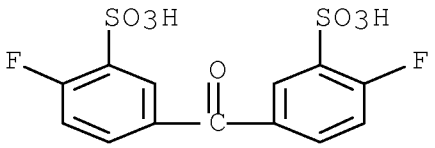
IT 862772-94-9DP, hydrolyzed
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membrane-electrode assembly for polymer electrolyte fuel cell)

RN 862772-94-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2),

polymer with bis(4-fluorophenyl)methanone and
4,4'-(9H-fluoren-9-ylidene)bis[phenol] (CA INDEX NAME)

CM 1

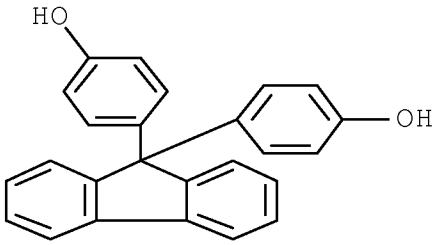
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

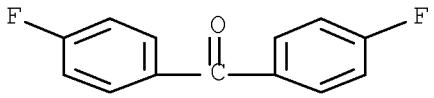
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

CRN 345-92-6
CMF C13 H8 F2 O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST membrane electrode assembly polymer electrolyte fuel cell
IT Fuel cell electrodes
Fuel cells
Membrane electrodes
Polymer electrolytes
(membrane-electrode assembly for polymer electrolyte fuel cell)
IT Carbon fibers, uses
Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(membrane-electrode assembly for polymer electrolyte fuel cell)
IT 647838-24-2, Hispec 6000 1058165-28-8, Hispec 10000
RL: CAT (Catalyst use); USES (Uses)
(membrane-electrode assembly for polymer electrolyte fuel cell)
IT 345-92-6, 4,4'-Difluorobenzophenone 8014-95-7, Fuming sulfuric acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(membrane-electrode assembly for polymer electrolyte fuel cell)
IT 210531-45-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(membrane-electrode assembly for polymer electrolyte fuel cell)
IT 862772-94-9DP, hydrolyzed
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membrane-electrode assembly for polymer electrolyte fuel cell)

L28 ANSWER 2 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:887470 HCAPLUS Full-text
DN 149:204439
TI Electrolyte, membrane-electrode assembly (MEA), fuel cell unit cell, and the fuel cell
IN Shiramizu, Kohei; Kodaira, Hideki
PA Toppan Printing Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 36pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008171663	A	20080724	JP 2007-3267	200701 11

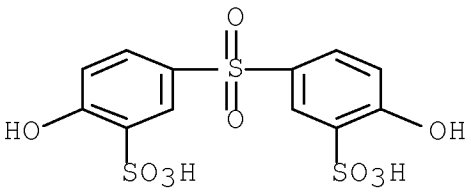
PRAI JP 2007-3267 20070111
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The electrolyte has a copolymer comprising a first carbon compound, a second carbon compound, and a third carbon compound; where the first carbon compound has a first structure comprising a proton acid group-containing aromatic ring and represented by I and/or II [V = C1-6 alkylene group, 9,9-fluorenylidene group, -O-, -S-, -S(O)-, S(O)2-, -C(O)-, -P(O)(C6H5), -C(CH3)2-, -C(CF3)2-, C6H4-C6H4-, -C(C6H5)2-, or -C(=CH2); R = C1-6 aliphatic group, C1-6 alkoxy, Ph, phenoxy, nitro, cyano, H, Cl, Br, or I; X = proton acid obtained from SO3H, COOH, or PO3H2; m = integer 1-4; n = 1, 2]; the second carbon compound has a second structure comprising an heterocyclic ring and an aromatic ring and represented by III [Y = C1-6 alkylene group, -O-, -NH-, -N(Q)-; U = C1-6 alkylene group; Z = C1-6 alkylene group, -O-, -S-, -S(O)-, S(O)2-, -C(O)-, -NH-, -N(Q)-; T = bond, phenylene; U = O, bond; Q = C1-6 aliphatic group, Ph, nitro-Ph, alkoxy Ph, fluoro-Ph, chloro-Ph, bromo-Ph; iodo-Ph, cyano-Ph, aceto-Ph, OH, H, Cl, Br, and I] and the third carbon compound has a structure comprising an aromatic ring represented by I and/or II [n = 1-3, m = 0]. The membrane -electrode assembly has an electrode catalyst layer on both sides of a H+-conductive film which comprises the above electrolyte.

IT 53819-45-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

RN 53819-45-7 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-hydroxy-, sodium salt (1:2) (CA INDEX NAME)



●2 Na

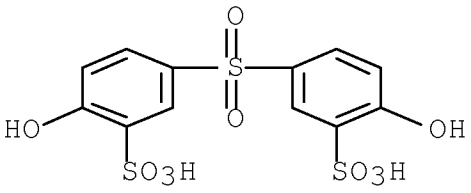
IT 866552-08-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

RN 866552-08-1 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-hydroxy-, sodium salt (1:2), polymer with 4,4'-oxybis[phenol] and 1,1'-sulfonylbis[4-chlorobenzene] (CA INDEX NAME)

CM 1

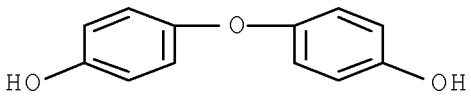
CRN 53819-45-7
CMF C12 H10 O10 S3 . 2 Na



●2 Na

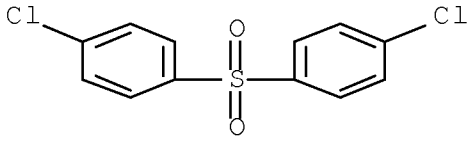
CM 2

CRN 1965-09-9
CMF C12 H10 O3



CM 3

CRN 80-07-9
CMF C12 H8 Cl2 O2 S



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fuel cell electrodes
Fuel cell electrolytes
Polymer electrolytes
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT Glass fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT Epoxy resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT 1965-09-9, 4,4'-Dihydroxy diphenyl ether 2272-40-4
RL: FMU (Formation, unclassified); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT 62-53-3, Phenyl amine, reactions 80-07-9, Bis(4-chlorophenyl) sulfone 108-67-8, Mesitylene, reactions 108-77-0, 2,4,6-Trichloro-1,3,5,-triazine 123-31-9, Hydroquinone, reactions 53819-45-7
RL: RCT (Reactant); RACT (Reactant or reagent)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT 866552-08-1P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

IT 7440-06-4, Platinum, uses 7440-22-4, Silver, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(compns. of polymer electrolytes in membrane-electrode assemblies for fuel cells)

L28 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859827 HCAPLUS Full-text
DN 149:157223
TI Polymer electrolyte membrane/catalyst assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2008166050	A	20080717	JP 2006-352397	20061227
PRAI JP 2006-352397		20061227		

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The MEA contains a polymer electrolyte membrane comprising (1) a polymer represented by the general formula I [n1, n2, m1-m3 = ≥1-integer satisfying n1/(n + n2) = 0.40-0.70, m3/(m1 + m2 + m3) =

0.005-0.05, and m2/(m1 + m2 + m3) = 0.01-0.20] and (2) 5-15% of a polymer II [n3 = ≥1-integer; m4, m5 = ≥1-integer satisfying m5/(m4 + m5) = 0.60-0.80] and an electrode catalyst layer which is bonded directly at least on one side of the polymer electrolyte membrane, where the surface roughness of the membrane/catalyst interface is ≤1 μm. The MEA is prepared by direct application of a catalyst slurry containing an electrode catalyst, a polymer electrolyte and a solvent at least on one side of the polymer electrolyte membrane containing the polymer I and 5-15% of the polymer II in such a way that the surface roughness of the membrane /catalyst interface becomes ≤1 μm. The hydrogen-fueled polymer electrolyte fuel cell shows high output performance even in low moisturizing condition and also shows excellent durability.

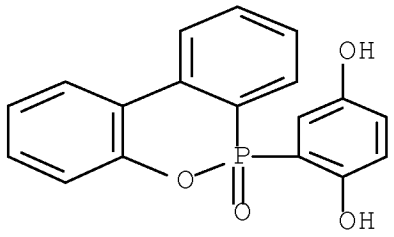
IT 1027300-88-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

RN 1027300-88-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

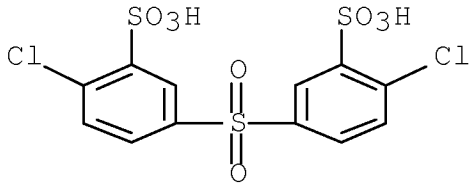
CM 1

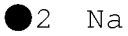
CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

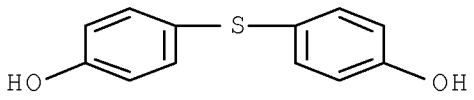
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na





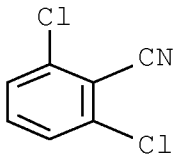
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST hydrogen fueled polymer electrolyte fuel cell; polymer electrolyte membrane electrode assembly

IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers, Nafion; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzimidazole-; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polythioethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyoxyarylene-polysulfone-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyoxyarylene-polythioether-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polyoxyarylenes
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-polythioether-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Fuel cells
(polymer electrolyte; polymer electrolyte membrane /electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

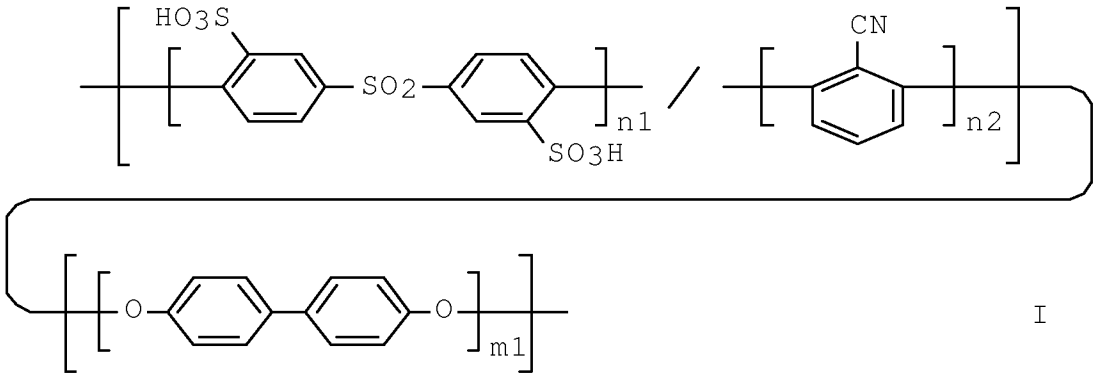
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers, Nafion; manufacture of
polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing, Nafion; manufacture of
polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyoxyarylene-polysulfone-polythioether-, cyano-containing; manufacture
of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Polybenzimidazoles
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-; manufacture of polymer electrolyte membrane
/electrode assembly for hydrogen-fueled polymer electrolyte fuel
cells)
IT 9002-84-0, Polyflon D 1E
RL: TEM (Technical or engineered material use); USES (Uses)
(carbon paper waterproofed with; manufacture of polymer electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 861709-53-7P, 2,5-Dicarboxybenzenesulfonic acid monosodium salt-3,5-dicarboxyphenylphosphonic
acid-3,3',4,4'-tetraaminodiphenylsulfone copolymer
1027300-88-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode
assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(platinum/carbon electrode catalyst

layer; manufacture of polymer electrolyte membrane /electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

L28 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859826 HCAPLUS Full-text
DN 149:180166
TI Polymer electrolyte membrane/catalyst assembly, its manufacture, and hydrogen-fueled fuel cell
IN Yamashita, Masahiro; Kitamura, Kota; Yamaguchi, Hiroki; Yamada, Takatoshi; Shimizu, Yusuke; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008166049	A	20080717	JP 2006-352389	200612 27

PRAI JP 2006-352389 20061227
GI



I

AB The polymer electrolyte membrane/catalyst assembly contains (1) a polymer electrolyte membrane which contains a polymer I (n1, n2 = ≥1-

integer satisfying n1/(n1 + n2) = 0.40-0.70; m1 = ≥1-integer) and shows coefficient of linear expansion at 150-200° (TGA, in N3, 30-min dry at 25° followed by heating at 5°/min to 350°) in a predetd. range and (2) an electrode catalyst layer which is bonded directly on at least one side of the polymer electrolyte membrane and has been formed by direct application of a catalyst slurry containing Pt/C powder, ionomers, and solvent in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm.

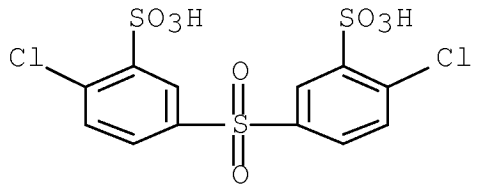
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

RN 681035-31-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

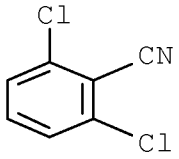
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

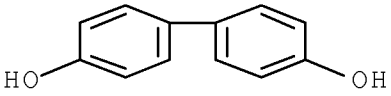
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 92-88-6
CMF C12 H10 O2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polyarylene ether hydrogen fueled fuel cell; polymer electrolyte membrane catalyst assembly
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers, Nafion; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Fuel cells
(polymer electrolyte; polymer electrolyte membrane /electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)
IT Fluoropolymers, uses

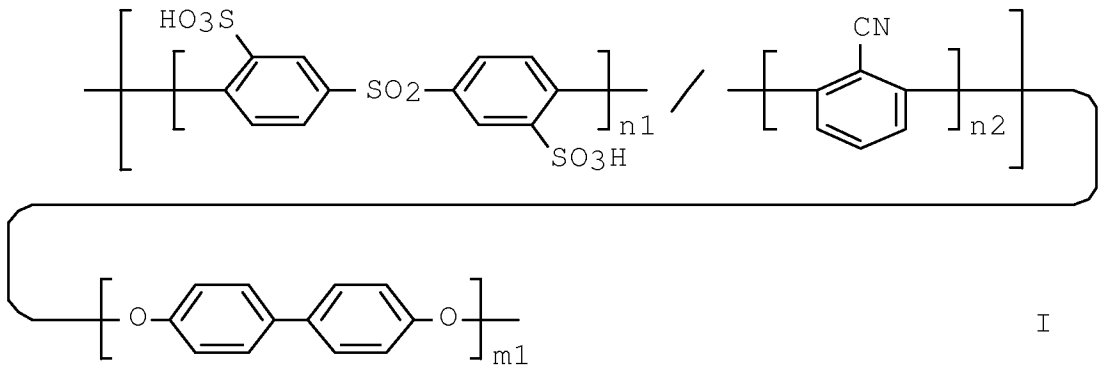
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers, Nafion; manufacture of
polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing, Nafion;
manufacture of
polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyoxyphenylene-, oxynitrile-, sulfonic acid group-containing;
polymer electrolyte membrane/electrode assembly (MEA),
its manufacture, and its hydrogen-fueled polymer electrolyte fuel
cells)
IT Polyoxyphenylenes
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polysulfone-, oxynitrile-, sulfonic acid group-containing;
polymer
electrolyte membrane/electrode assembly (MEA), its
manufacture, and its hydrogen-fueled polymer electrolyte fuel
cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(Pt/carbon electrode catalyst layer
; manufacture of polymer electrolyte membrane/electrode
assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 9002-84-0, Polyflon D 1E
RL: TEM (Technical or engineered material use); USES (Uses)
(carbon paper water-proofed with; manufacture of polymer
electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-
disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

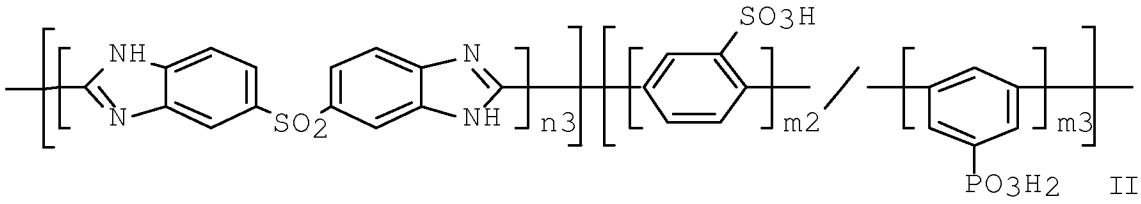
L28 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859823 HCAPLUS Full-text
DN 149:180165
TI Polymer electrolyte membrane/catalyst assembly, its manufacture, and hydrogen-fueled fuel cell
IN Sakaguchi, Yoshimitsu; Kitamura, Kota; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 15pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008166037	A	20080717	JP 2006-352154	20061227

PRAI JP 2006-352154 20061227
GI



I



II

AB The polymer electrolyte membrane/catalyst assembly contains (1) a polymer electrolyte membrane which is composed of 85–95% of a polymer I (n1, n2 = ≥1-integer satisfying n1/(n1 + n2) = 0.40–0.70; m1 = ≥1-integer) and 5–15% of a polymer II (n3 = ≥1-integer; m2, m3 = ≥1 integer satisfying m3/(m2 + m3) = 0.60–0.80) and (2) an electrode catalyst layer which is bonded directly on at least one side of the polymer electrolyte membrane and has been formed by direct application of a catalyst slurry containing electrode catalysts, polymer electrolytes, and solvents in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm.

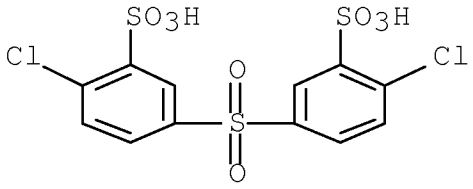
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

RN 681035-31-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

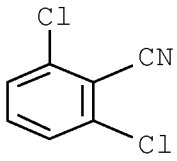
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

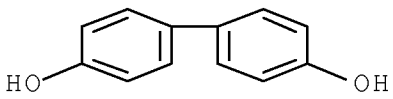
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 92-88-6
CMF C12 H10 O2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST hydrogen fueled fuel cell; polymer electrolyte membrane catalyst assembly
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers, Nafion; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polybenzimidazole-, sulfonic acid and phosphonic acid group-containing; polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)
IT Fuel cells
(polymer electrolyte; polymer electrolyte membrane /electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers, Nafion; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing, Nafion; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyoxyphenylene-, oxynitrile-, sulfonic acid group-containing; polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

IT Polyoxyphenylenes
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, oxynitrile-, sulfonic acid group-containing; polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

IT Polybenzimidazoles
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfonic acid and phosphonic acid group-containing; polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(Pt/carbon electrode catalyst layer ; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT 9002-84-0, Polyflon D 1E
RL: TEM (Technical or engineered material use); USES (Uses)
(carbon paper water-proofed with; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer 861709-53-7P, 2,5-Dicarboxybenzenesulfonic acid monosodium salt-3,5-dicarboxyphenylphosphonic acid-3,3',4,4'-tetraaminodiphenyl sulfone copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

L28 ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859822 HCAPLUS Full-text
DN 149:157283
TI Polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 14pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008166036	A	20080717	JP 2006-352148	20061227
PRAI JP 2006-352148		20061227		

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The MEA contains a polymer electrolyte membrane comprising a polymer represented by the general formula I [n1, n2 , m1-m3 = ≥1-integer satisfying n1/(n + n2) = 0.40-0.70, m3/(m1 + m2 + m3) = 0.005-0.05, and m2/(m1 + m2 + m3) = 0.01-0.20] and an electrode catalyst layer which is bonded directly at least on one side of the polymer electrolyte membrane, where the surface roughness of the membrane/catalyst interface is ≤1 μm. The MEA is prepared by direct application of a catalyst slurry containing an electrode catalyst, a polymer electrolyte and a solvent at least on one side of the polymer electrolyte membrane of a polymer I in such a way that the surface roughness of the membrane /catalyst interface becomes ≤1 μm. The hydrogen-fueled polymer electrolyte fuel cell shows high output performance even in low moisturizing condition and also shows excellent durability.

IT 916849-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered

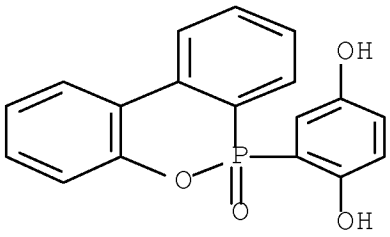
material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

RN 916849-47-3 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

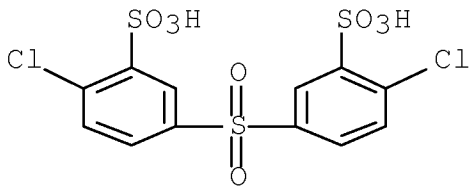
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

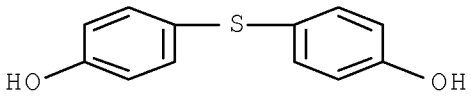
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

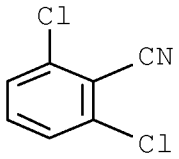
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



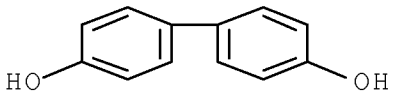
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

CRN 92-88-6
CMF C12 H10 O2



CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)
ST hydrogen fueled polymer electrolyte fuel cell; polymer electrolyte membrane electrode assembly
IT Carbon black, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Polythioethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyoxyarylene-polysulfone-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyoxyarylene-polythioether-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Polyoxyarylenes
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-polythioether-, cyano-containing; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Fuel cells
(polymer electrolyte; polymer electrolyte membrane /electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)

(polyoxyalkylenes, fluorine- and sulfo-containing; manufacture of polymer
electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyoxyarylene-polysulfone-polythioether-, cyano-containing; manufacture
of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT 9002-84-0, Polyflon D 1E
RL: TEM (Technical or engineered material use); USES (Uses)
(carbon paper waterproofed with; manufacture of polymer electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte
membrane/electrode assembly for hydrogen-fueled polymer
electrolyte fuel cells)
IT 916849-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode
assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(platinum/carbon electrode catalyst
layer; manufacture of polymer electrolyte membrane
/electrode assembly for hydrogen-fueled polymer electrolyte fuel
cells)

L28 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:608975 HCAPLUS Full-text
DN 148:565371
TI Sulfo-bearing branched polymers, compositions containing the polymers, polymer electrolytes made of the compositions, and membrane-electrode assemblies (MEA) for polymer-electrolyte fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Sasai, Kosuke
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 34pp.
CODEN: JKXXAF
DT Patent

LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008115340	A	20080522	JP 2006-302281	20061108
PRAI JP 2006-302281		20061108		

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The title polymers have structural units (I) [X = SO2, CO; Y = H, monovalent cation; Z1-2 = O, S; Ar1 = p-C6H4Z3-p-C6H4; Z3 = O, S, C(Me)2, etc.; Ar2 = p-C6H4SO2-p-C6H4, p-C6H4CO-p-C6H4, etc.; Ar3 = p-C6H4SO2-p-C6H4, etc.; n, m, o, p ≥1] and linking groups selected from Q1, Q2, etc., between I. Alternatively, structural units of the polymers are (II) [Ar4 = p-C6H4SO2-p-C6H4, etc.; Ar5 = p-C6H4SO2-p-C6H4, etc.; q ≥4; r, s ≥1]. Fuel cell membrane-electrode assemblies (MEA) contain title polymer composition in electrolyte membranes and/or electrode catalyst layers of polymer-electrolyte fuel cells. The MEA show small methanol permeation coefficient and achieve high energy output performance.

IT 1025740-05-9DP, protonated 1025740-06-0DP, protonated 1025740-07-1DP, protonated 1025740-08-2DP, protonated 1025740-09-3DP, protonated 1025740-10-6DP, protonated 1025740-11-7DP, protonated 1025740-12-8DP, protonated 1025740-13-9DP, protonated 1025740-14-0DP, protonated 1025740-15-1DP, protonated 1025740-16-2DP, protonated 1025740-17-3DP, protonated 1025740-18-4DP, protonated 1025740-19-5DP, protonated 1025740-20-8DP, protonated 1025740-21-9DP, protonated
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

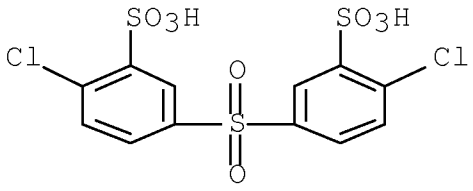
RN 1025740-05-9 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-thiobis[phenol] (CA INDEX

NAME)

CM 1

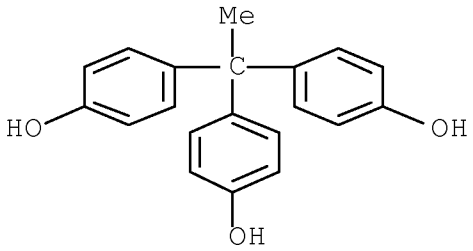
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

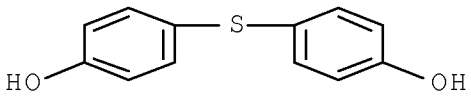
CM 2

CRN 27955-94-8
CMF C20 H18 O3



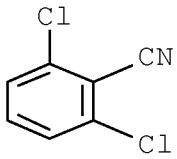
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



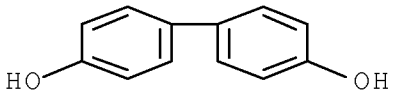
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

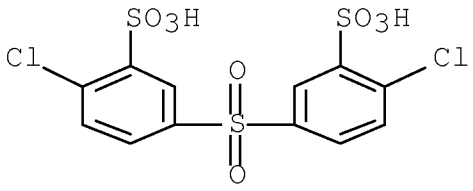
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-06-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4'-thiobis[phenol] and 1,3,5-triazine-2,4,6(1H,3H,5H)-trione (CA INDEX NAME)

CM 1

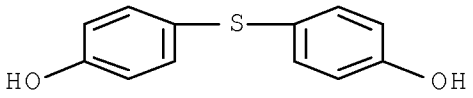
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

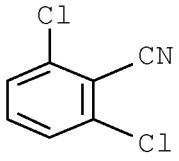
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



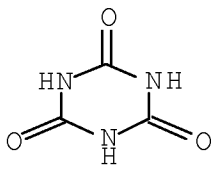
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



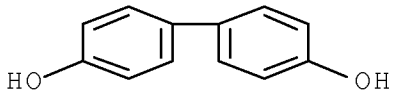
CM 4

CRN 108-80-5
CMF C3 H3 N3 O3



CM 5

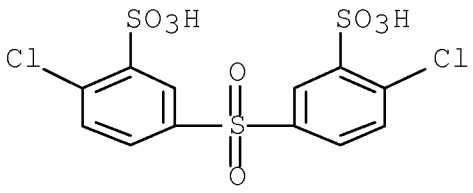
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-07-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4'-thiobis[phenol] and 1,3,5-triazine-2,4,6(1H,3H,5H)-trithione (CA INDEX NAME)

CM 1

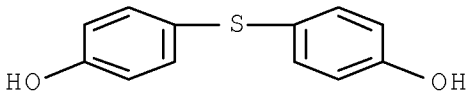
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

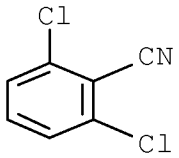
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



CM 3

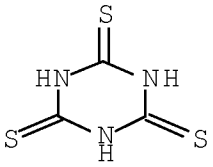
CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

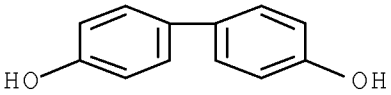
CRN 638-16-4

CMF C3 H3 N3 S3



CM 5

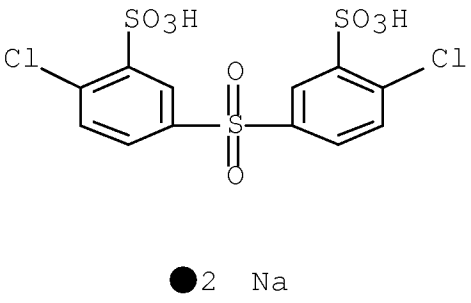
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-08-2 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 1,3,5-benzenetriol, [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[phenol] (CA INDEX NAME)

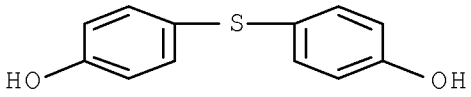
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



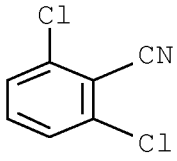
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



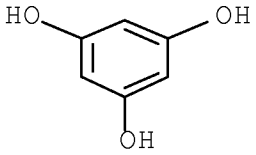
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



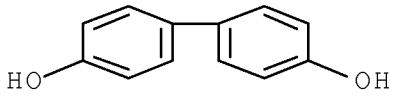
CM 4

CRN 108-73-6
CMF C6 H6 O3



CM 5

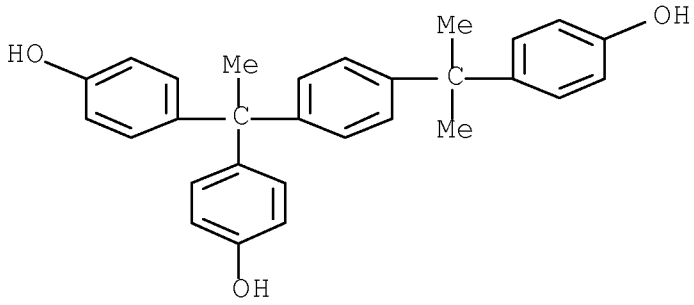
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-09-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4'-[1-[4-[1-(4-hydroxyphenyl)-1-methylethyl]phenyl]ethylidene]bis[phenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

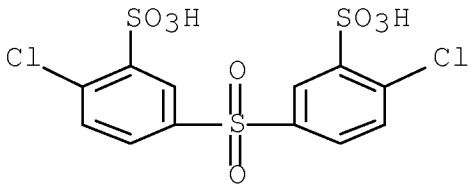
CM 1

CRN 110726-28-8
CMF C29 H28 O3



CM 2

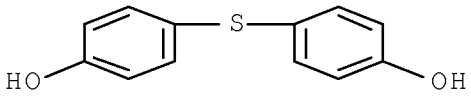
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

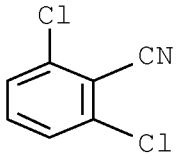
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



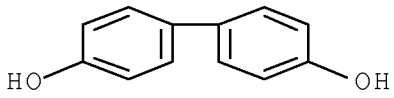
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

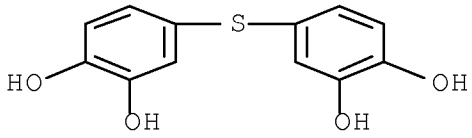
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-10-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4'-thiobis[1,2-benzenediol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

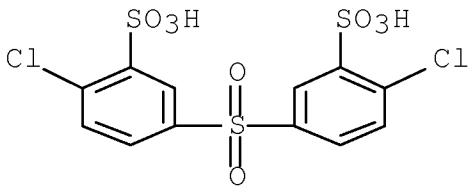
CM 1

CRN 65201-00-5
CMF C12 H10 O4 S



CM 2

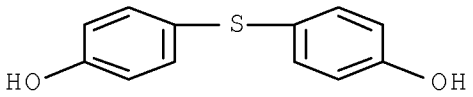
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

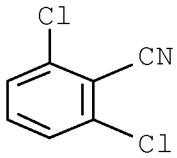
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



CM 4

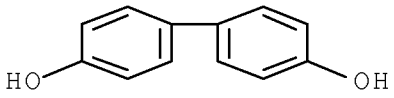
CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

CRN 92-88-6

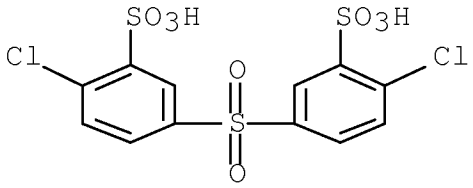
CMF C12 H10 O2



RN 1025740-11-7 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-oxybis[phenol] (CA INDEX NAME)

CM 1

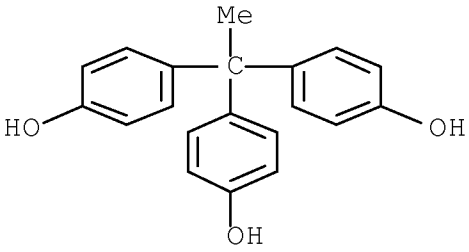
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

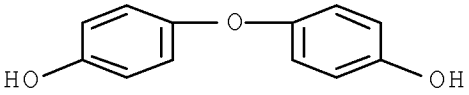
CM 2

CRN 27955-94-8
CMF C20 H18 O3



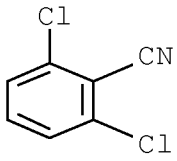
CM 3

CRN 1965-09-9
CMF C12 H10 O3



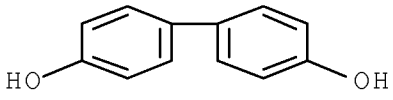
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

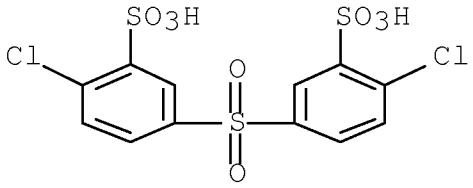
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-12-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-thiobis[benzenethiol] (CA INDEX NAME)

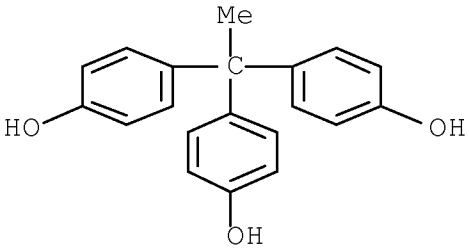
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



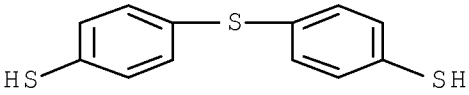
CM 2

CRN 27955-94-8
CMF C20 H18 O3



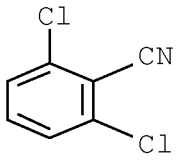
CM 3

CRN 19362-77-7
CMF C12 H10 S3



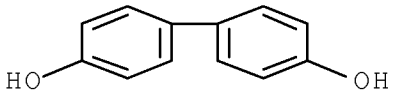
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

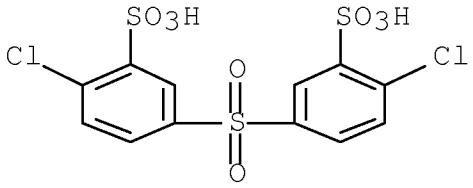
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-13-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-(1-methylethylidene)bis[phenol] (CA INDEX NAME)

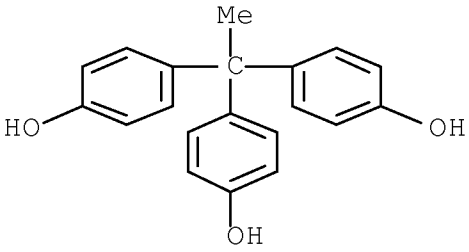
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



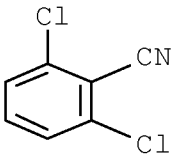
CM 2

CRN 27955-94-8
CMF C20 H18 O3



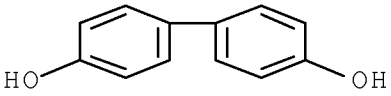
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



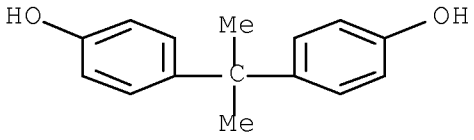
CM 4

CRN 92-88-6
CMF C12 H10 O2



CM 5

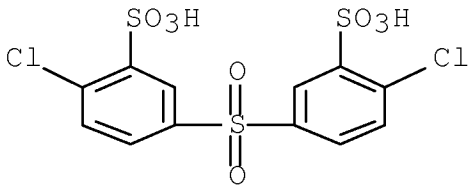
CRN 80-05-7
CMF C15 H16 O2



RN 1025740-14-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

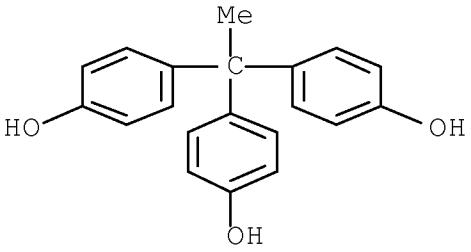
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

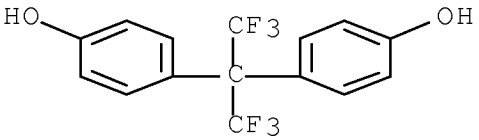
CM 2

CRN 27955-94-8
CMF C20 H18 O3



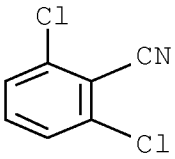
CM 3

CRN 1478-61-1
CMF C15 H10 F6 O2



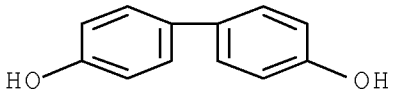
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

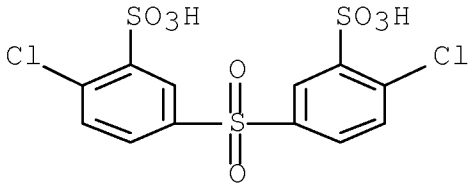
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-15-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-methylenebis[phenol] (CA INDEX NAME)

CM 1

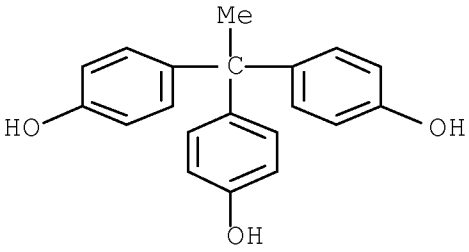
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

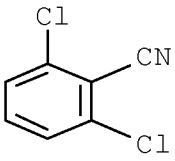
CM 2

CRN 27955-94-8
CMF C20 H18 O3



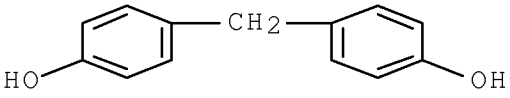
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



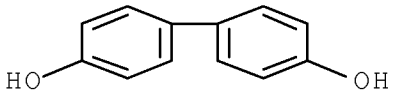
CM 4

CRN 620-92-8
CMF C13 H12 O2



CM 5

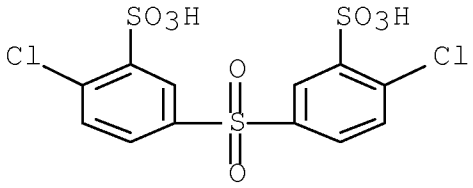
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-16-2 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 4,4'-cyclohexylidenebis[phenol], 2,6-dichlorobenzonitrile and 4,4',4''-ethylidynetris[phenol] (CA INDEX NAME)

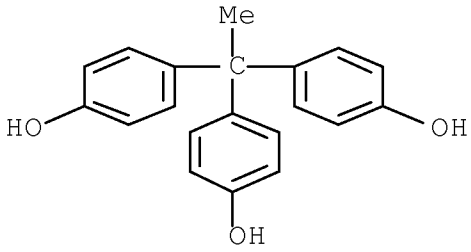
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



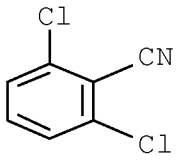
CM 2

CRN 27955-94-8
CMF C20 H18 O3



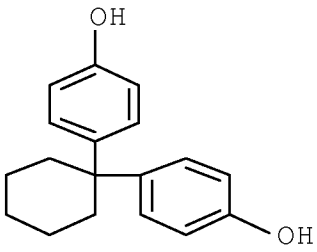
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



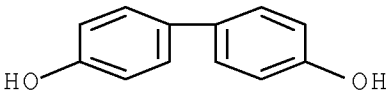
CM 4

CRN 843-55-0
CMF C18 H20 O2



CM 5

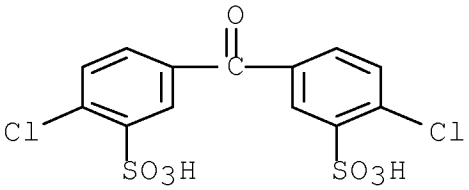
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-17-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

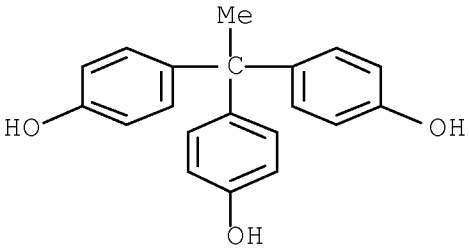
CRN 57004-46-3
CMF C13 H8 Cl2 O7 S2 . 2 Na



●2 Na

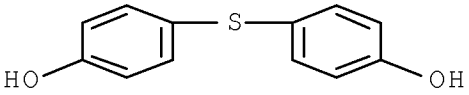
CM 2

CRN 27955-94-8
CMF C20 H18 O3



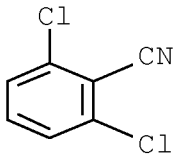
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



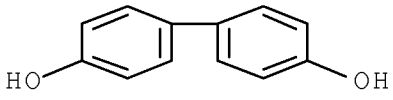
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

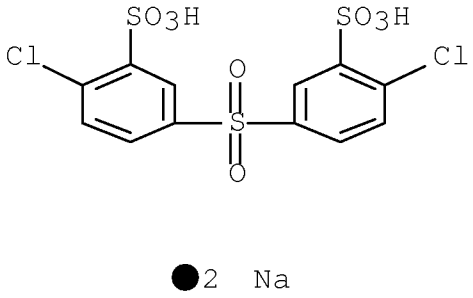
CRN 92-88-6
CMF C12 H10 O2



RN 1025740-18-4 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol], 1,1'-sulfonylbis[4-chlorobenzene] and 4,4'-thiobis[phenol] (CA INDEX NAME)

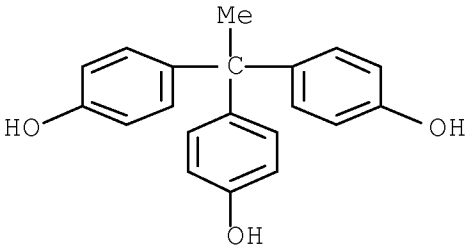
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



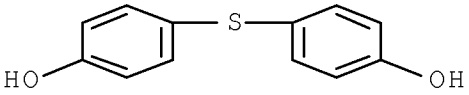
CM 2

CRN 27955-94-8
CMF C20 H18 O3



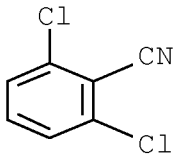
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



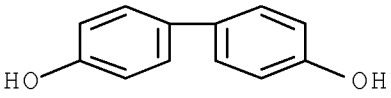
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



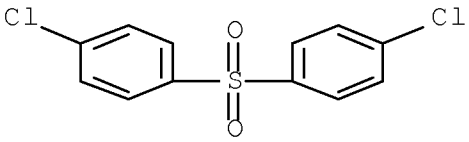
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

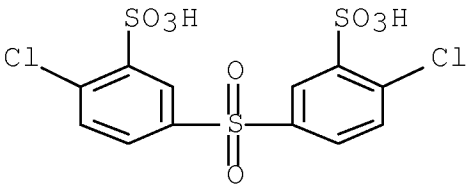
CRN 80-07-9
CMF C12 H8 Cl2 O2 S



RN 1025740-19-5 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

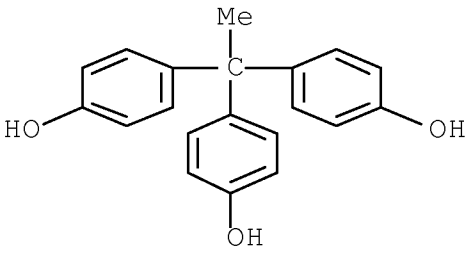
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

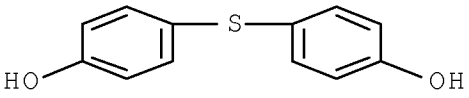
CM 2

CRN 27955-94-8
CMF C20 H18 O3



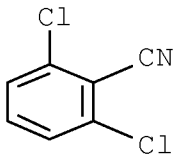
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



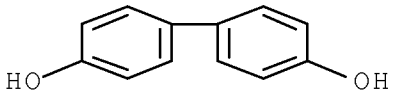
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



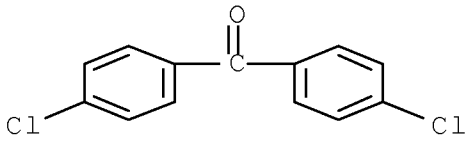
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

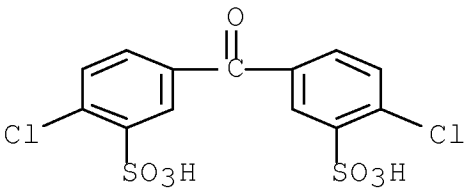
CRN 90-98-2
CMF C13 H8 Cl2 O



RN 1025740-20-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

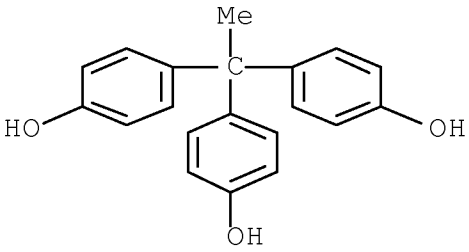
CRN 57004-46-3
CMF C13 H8 Cl2 O7 S2 . 2 Na



●2 Na

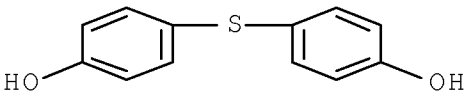
CM 2

CRN 27955-94-8
CMF C20 H18 O3



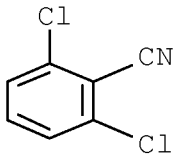
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



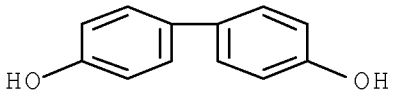
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



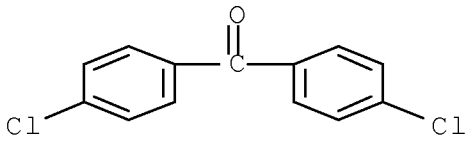
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

CRN 90-98-2
CMF C13 H8 Cl2 O

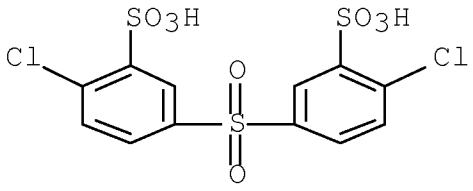


RN 1025740-21-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile, 4,4',4''-ethylidynetris[phenol] and 4,4'-oxybis[phenol] (CA INDEX

NAME)

CM 1

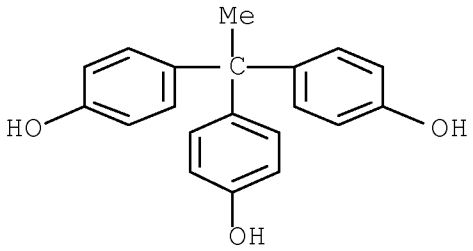
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

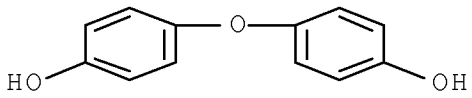
CM 2

CRN 27955-94-8
CMF C20 H18 O3



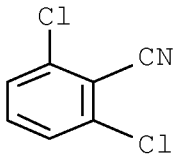
CM 3

CRN 1965-09-9
CMF C12 H10 O3



CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, fluorine- and sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfo-containing, cardo; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polysulfides
RL: IMF (Industrial manufacture); TEM (Technical or engineered

material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-polysulfide-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Polysulfides
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Polyketones
Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfide-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfide-polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Fluoropolymers, uses
Polysulfides
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Cardo polymers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfones, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered

material use); PREP (Preparation); USES (Uses)
(polyketone-polysulfide-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-polysulfide-polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Fuel cells
(polymer electrolyte; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfide-polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, fluorine- and sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfo-containing, cardo; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfo-containing; sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

IT Fuel cell electrolytes
(sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

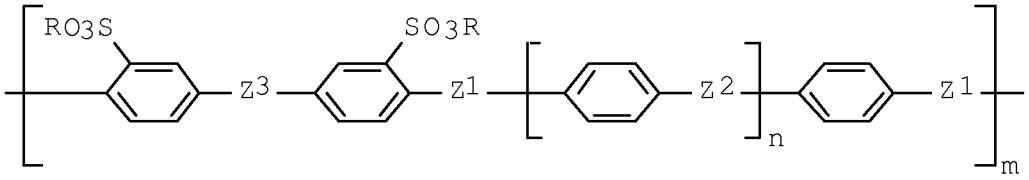
IT 1025740-05-9DP, protonated 1025740-06-0DP, protonated 1025740-07-1DP, protonated

1025740-08-2DP, protonated 1025740-09-3DP, protonated 1025740-10-6DP, protonated 1025740-11-7DP, protonated 1025740-12-8DP, protonated 1025740-13-9DP, protonated 1025740-14-0DP, protonated 1025740-15-1DP, protonated 1025740-16-2DP, protonated 1025740-17-3DP, protonated 1025740-18-4DP, protonated 1025740-19-5DP, protonated 1025740-20-8DP, protonated 1025740-21-9DP, protonated
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-bearing branched polymers for membrane-electrode assemblies for polymer-electrolyte fuel cells)

L28 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:215436 HCAPLUS Full-text
DN 148:288489
TI Sulfo-containing photocrosslinkable polymers, their compositions, polymer electrolyte membranes, membrane /electrode assembly, and fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Sasai, Kosuke
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 78pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008037897	A	20080221	JP 2006-210070	20060801

PRAI JP 2006-210070 20060801
GI



I

AB The sulfo-containing photocrosslinkable polymers have structural units of I and [Ar1Z4(C6H4-p-Z5)nC6H4-p-Z3]m [Z3 = SO2, CO; R = H, monovalent cation; Z1, Z4 = O, S; Z2, Z5 = O, S, CMe2, C(CF3)2, CH2, cyclohexyl; Ar1 = divalent aromatic; m = an integer; n ≥ 1], photocrosslinkable groups, and softening temperature ≤250° when Y = H. The compns. contain 1-100 weight% of the above polymers. Sulfo-containing crosslinked polymer compns. in which at least a part of the crosslinkable groups of the polymers is photocrosslinked are also claimed. Polymer electrolyte membranes made of the photocrosslinkable polymer compns. and crosslinked polymer electrolyte membranes made of the crosslinked polymer compns. are also claimed. The polymer electrolyte membrane /electrode assembly contains the (un)crosslinked polymer compns. in electrode catalyst layers or has the (un)crosslinked polymer membranes. The fuel cells use the membrane/electrode assembly. The polymer electrolyte membranes are manufactured by forming films of the photocrosslinkable polymer compns. and irradiating light to the films for photocrosslinking. The polymer electrolyte membranes show high proton conductivity and swelling resistance.

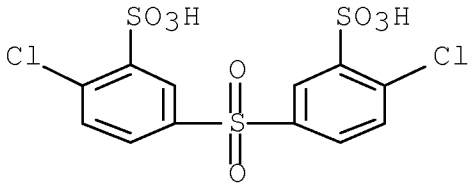
IT 916849-41-7DP, reaction products with chlorobenzophenone and dimethylphenol 1006382-68-8P 1006382-69-9P 1006382-70-2P 1006382-71-3P 1006382-72-4P 1006382-73-5P 1006382-74-6P 1006382-75-7P 1006382-76-8P 1006382-77-9P 1006382-78-0P 1006382-79-1P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

RN 916849-41-7 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

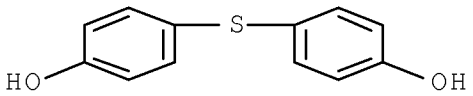
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

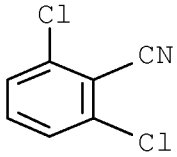
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



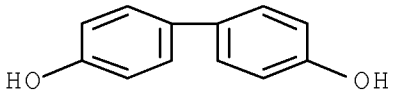
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

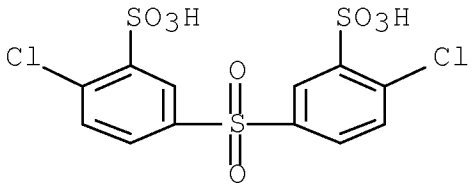
CRN 92-88-6
CMF C12 H10 O2



RN 1006382-68-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-(1-methylethylidene)bis[2-methylphenol] and 4,4'-oxybis[phenol] (CA INDEX NAME)

CM 1

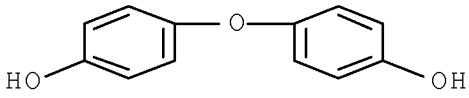
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

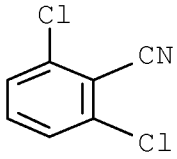
CM 2

CRN 1965-09-9
CMF C12 H10 O3



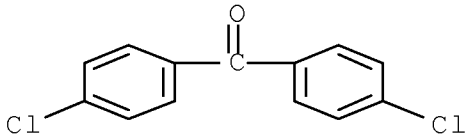
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



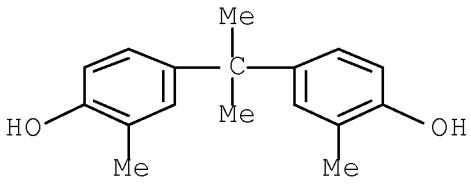
CM 4

CRN 90-98-2
CMF C13 H8 Cl2 O



CM 5

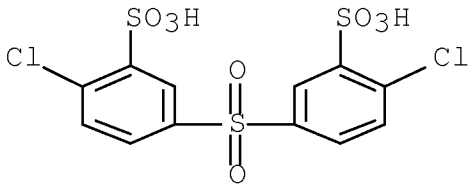
CRN 79-97-0
CMF C17 H20 O2



RN 1006382-69-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile and 4,4'-oxybis[phenol] (CA INDEX NAME)

CM 1

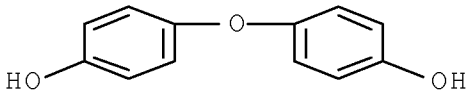
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

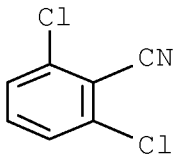
CM 2

CRN 1965-09-9
CMF C12 H10 O3



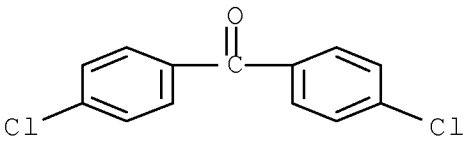
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

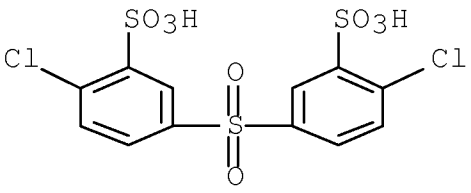
CRN 90-98-2
CMF C13 H8 Cl2 O



RN 1006382-70-2 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-thiobis[2-methylphenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

CM 2

CRN 24197-34-0
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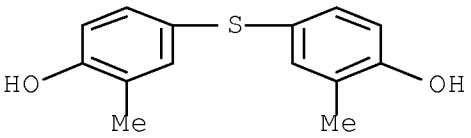
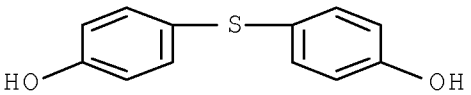


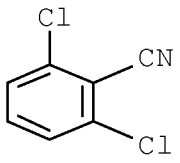
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



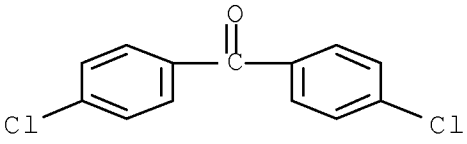
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

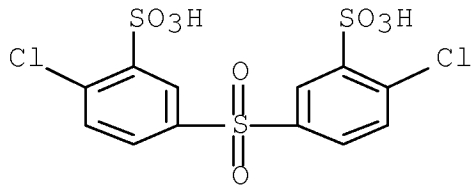
CRN 90-98-2
CMF C13 H8 Cl2 O

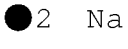


RN 1006382-71-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-methyl-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

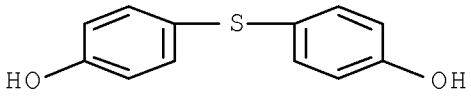
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na





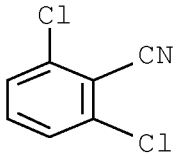
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



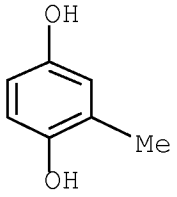
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



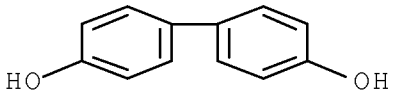
CM 4

CRN 95-71-6
CMF C7 H8 O2



CM 5

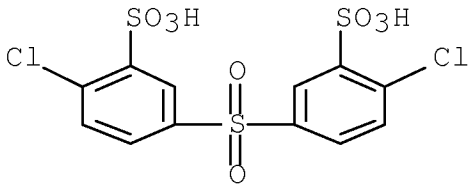
CRN 92-88-6
CMF C12 H10 O2



RN 1006382-72-4 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 4,4'-(1-methylethylidene)bis[2-methylphenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na

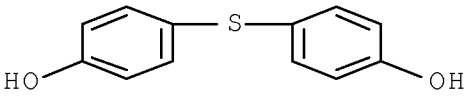


●2 Na

CM 2

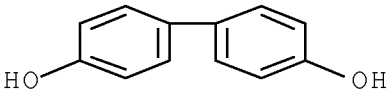
CRN 2664-63-3

CMF C12 H10 O2 S



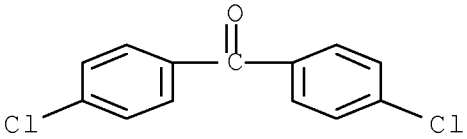
CM 3

CRN 92-88-6
CMF C12 H10 O2



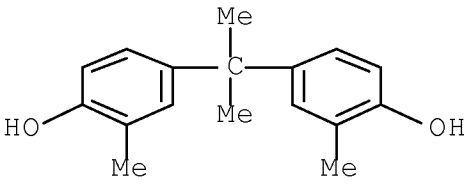
CM 4

CRN 90-98-2
CMF C13 H8 Cl2 O



CM 5

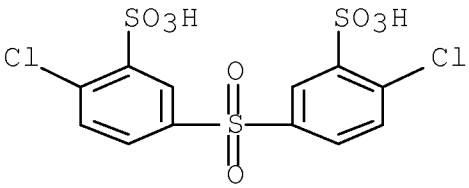
CRN 79-97-0
CMF C17 H20 O2



RN 1006382-73-5 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-(1-methylethylidene)bis[2-methylphenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

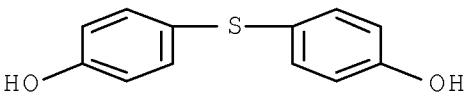
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

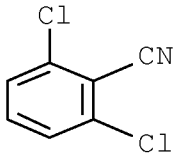
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



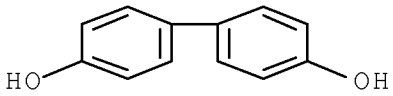
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



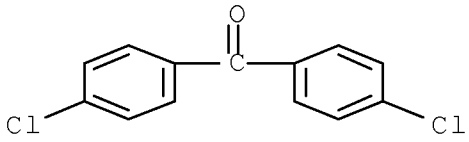
CM 4

CRN 92-88-6
CMF C12 H10 O2



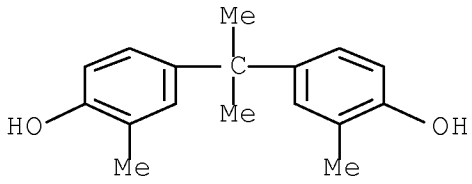
CM 5

CRN 90-98-2
CMF C13 H8 Cl2 O



CM 6

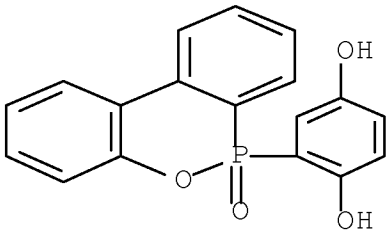
CRN 79-97-0
CMF C17 H20 O2



RN 1006382-74-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol, 4,4'-thiobis[2-methylphenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

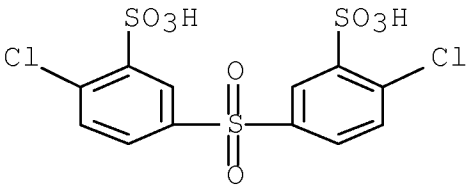
CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

CRN 51698-33-0

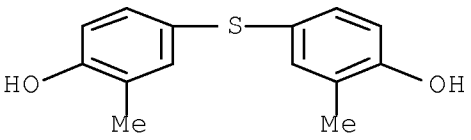
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

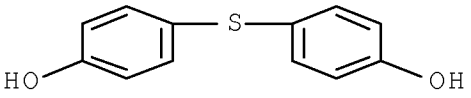
CM 3

CRN 24197-34-0
CMF C14 H14 O2 S



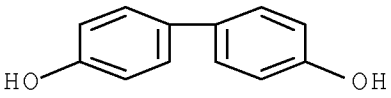
CM 4

CRN 2664-63-3
CMF C12 H10 O2 S



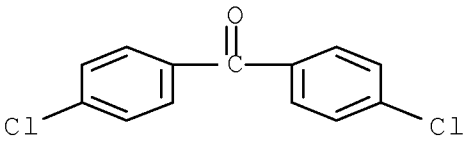
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

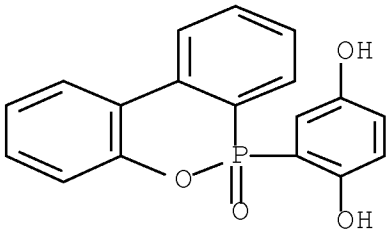
CRN 90-98-2
CMF C13 H8 Cl2 O



RN 1006382-75-7 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol, 4,4'-thiobis[2-methylphenol] and 4,4'-thiobis[phenol] (CA INDEX NAME)

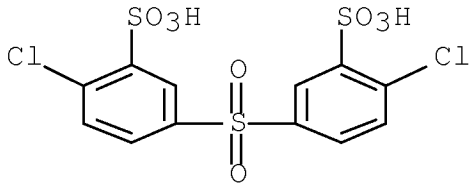
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

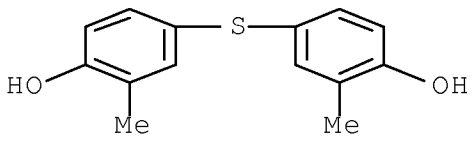
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

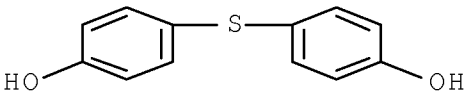
CM 3

CRN 24197-34-0
CMF C14 H14 O2 S



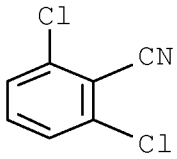
CM 4

CRN 2664-63-3
CMF C12 H10 O2 S



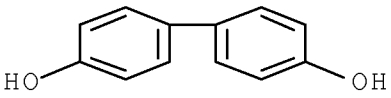
CM 5

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 6

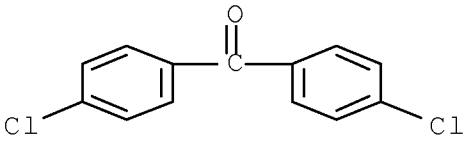
CRN 92-88-6
CMF C12 H10 O2



CM 7

CRN 90-98-2

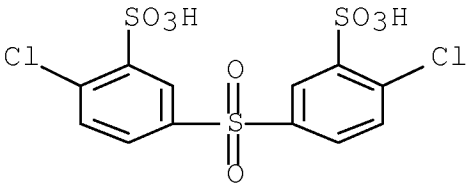
CMF C13 H8 Cl2 O



RN 1006382-76-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-thiobis[benzenethiol] and 4,4'-thiobis[2-methylphenol] (CA INDEX NAME)

CM 1

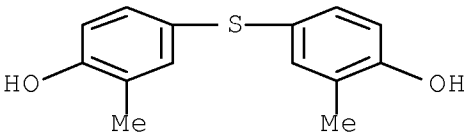
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

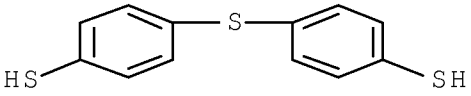
CM 2

CRN 24197-34-0
CMF C14 H14 O2 S



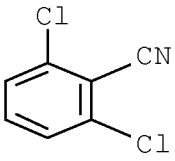
CM 3

CRN 19362-77-7
CMF C12 H10 S3



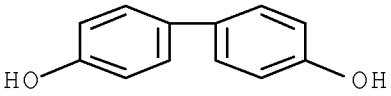
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



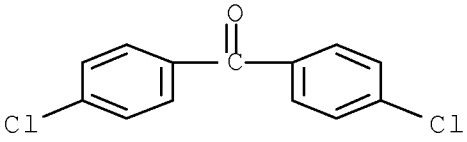
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

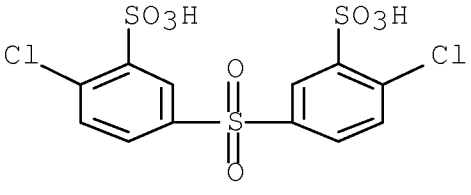
CRN 90-98-2
CMF C13 H8 Cl2 O



RN 1006382-77-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-(1-methylethylidene)bis[phenol] and 4,4'-thiobis[2-methylphenol] (CA INDEX NAME)

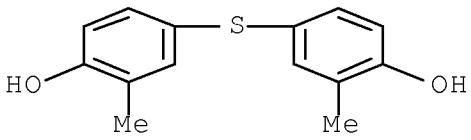
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



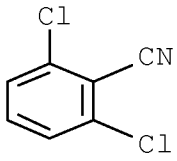
CM 2

CRN 24197-34-0
CMF C14 H14 O2 S



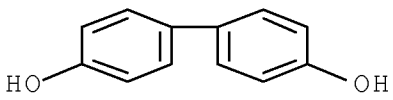
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



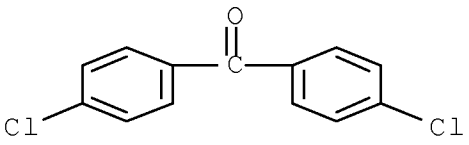
CM 4

CRN 92-88-6
CMF C12 H10 O2



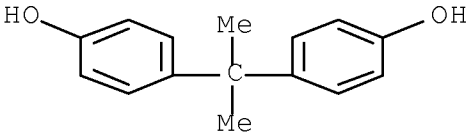
CM 5

CRN 90-98-2
CMF C13 H8 Cl2 O



CM 6

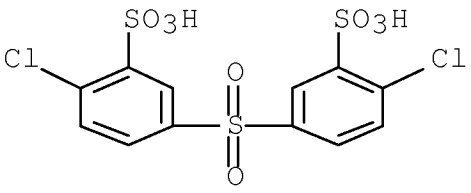
CRN 80-05-7
CMF C15 H16 O2



RN 1006382-78-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 2,6-dichlorobenzonitrile, 4,4'-thiobis[2-methylphenol] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

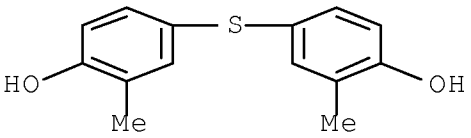
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

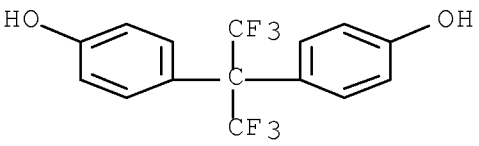
CM 2

CRN 24197-34-0
CMF C14 H14 O2 S



CM 3

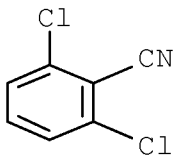
CRN 1478-61-1
CMF C15 H10 F6 O2



CM 4

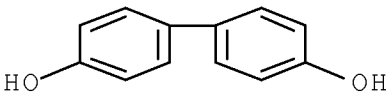
CRN 1194-65-6

CMF C7 H3 Cl2 N



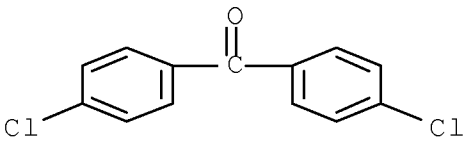
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

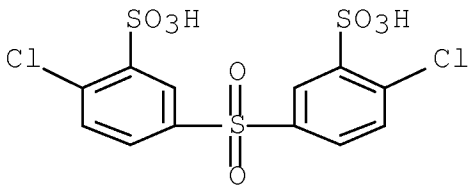
CRN 90-98-2
CMF C13 H8 Cl2 O



RN 1006382-79-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, bis(4-chlorophenyl)methanone, 4,4'-cyclohexylidenebis[phenol], 2,6-dichlorobenzonitrile and 4,4'-thiobis[2-methylphenol] (CA INDEX NAME)

CM 1

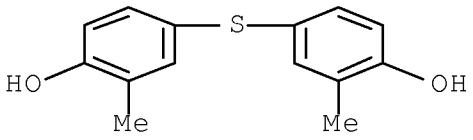
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

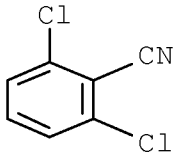
CM 2

CRN 24197-34-0
CMF C14 H14 O2 S



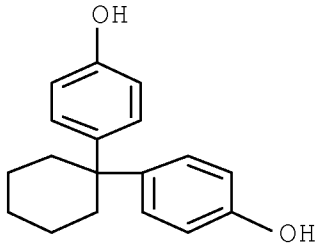
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



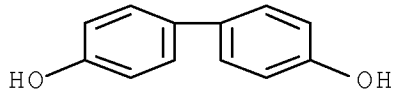
CM 4

CRN 843-55-0
CMF C18 H20 O2



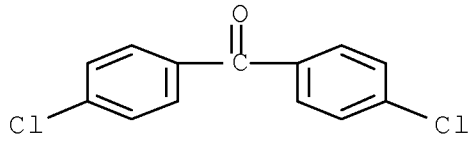
CM 5

CRN 92-88-6
CMF C12 H10 O2



CM 6

CRN 90-98-2
CMF C13 H8 Cl2 O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST sulfo photocrosslinkable polymer electrolyte membrane electrode assembly fuel cell
IT Crosslinking
(photochem.; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polythioethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-, sulfo-containing; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polythioethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-polysulfone-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in

fuel cells)

IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-, sulfo-containing; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane /electrode assembly in fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-polysulfone-, sulfo-containing; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-polysulfone-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane /electrode assembly in fuel cells)

IT Fuel cells
(polymer electrolyte; sulfo-containing photocrosslinkable polymers

for polymer electrolyte membranes and membrane /electrode assembly in fuel cells)
IT Ionic conductors
(protonic; sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Fuel cell electrolytes
(sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT 95-65-8DP, 3,4-Dimethylphenol, reaction products with sulfo-containing polymers 134-85-0DP, 4-Chlorobenzophenone, reaction products with sulfo-containing polymers 916849-41-7DP, reaction products with chlorobenzophenone and dimethylphenol 1006382-68-8P 1006382-69-9P 1006382-70-2P 1006382-71-3P 1006382-72-4P 1006382-73-5P 1006382-74-6P 1006382-75-7P 1006382-76-8P 1006382-77-9P 1006382-78-0P 1006382-79-1P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing photocrosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

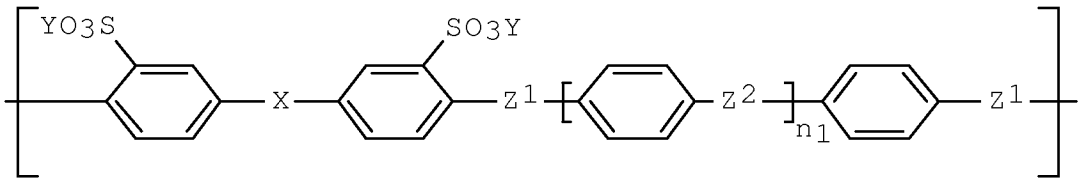
L28 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:215423 HCAPLUS Full-text
DN 148:242902
TI Sulfo-containing heat-crosslinkable polymers, their compositions, polymer electrolyte membranes, membrane /electrode assembly, and fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Sasai, Kosuke
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 48pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008037896	A	20080221	JP 2006-210069	200608

01

PRAI JP 2006-210069 20060801

GI



I

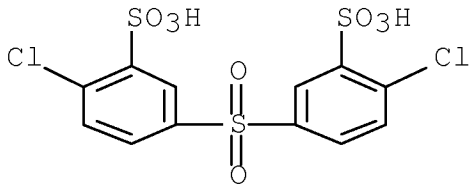
AB The sulfo-containing heat-crosslinkable polymers have structural units of I and [Ar1Z3(C6H4-p-Z4)n2C6H4-p-Z3] [X = S(:O)2, C(:O); Y = H, monovalent cation; Z1, Z3 = O, S; Z2, Z4 = O, S, CMe2, C(CF3)2, CH2, cyclohexyl; Ar1 = divalent aromatic; n1, n2 ≥ 1], heat-crosslinkable groups, and softening temperature ≤250° when Y = H. The compns. contain 1-100 weight% of the above polymers. Sulfo-containing crosslinked polymer compns. in which at least a part of the heat-crosslinkable groups of the polymers is heat-crosslinked are also claimed. Polymer electrolyte membranes made of the heat-crosslinkable polymer compns. and crosslinked polymer electrolyte membranes made of the crosslinked polymer compns. are also claimed. The polymer electrolyte membrane /electrode assembly contains the (un)crosslinked polymer compns. in electrode catalyst layers or has the (un)crosslinked polymer membranes. The fuel cells use the membrane/electrode assembly. The polymer electrolyte membranes show high proton conductivity and swelling resistance.

IT 916849-36-0DP, reaction products with chloropropyne
916849-41-7DP, reaction products with ethynylphenol or hydroxystyrene 916849-42-8DP, reaction products with ethynylphenol 916849-43-9DP, reaction products with ethynylphenol 916849-44-0DP, reaction products with ethynylphenol 916849-45-1DP, reaction products with ethynylphenol 916849-47-3DP, reaction products with ethynylphenol
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

RN 916849-36-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-oxybis[phenol] (CA INDEX NAME)

CM 1

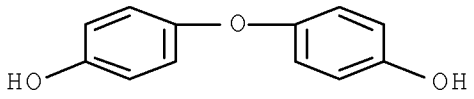
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

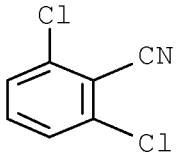
CM 2

CRN 1965-09-9
CMF C12 H10 O3



CM 3

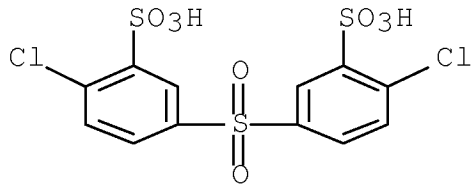
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 916849-41-7 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[phenol] (CA INDEX NAME)

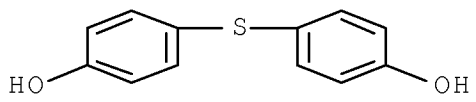
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



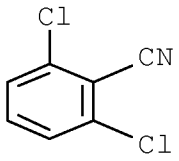
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



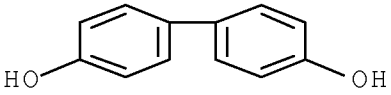
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

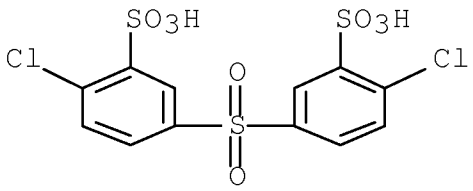
CRN 92-88-6
CMF C12 H10 O2



RN 916849-42-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[benzenethiol] (CA INDEX NAME)

CM 1

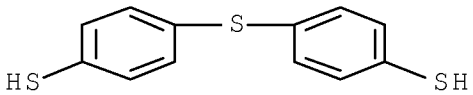
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

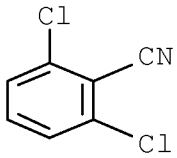
CM 2

CRN 19362-77-7
CMF C12 H10 S3



CM 3

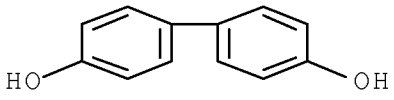
CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

CRN 92-88-6

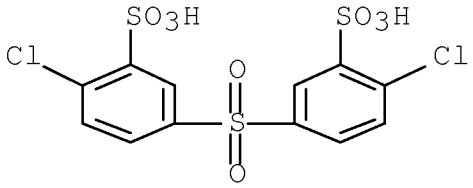
CMF C12 H10 O2



RN 916849-43-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-(1-methylethylidene)bis[phenol] (CA INDEX NAME)

CM 1

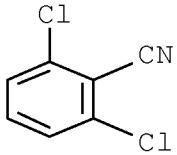
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

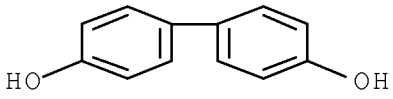
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



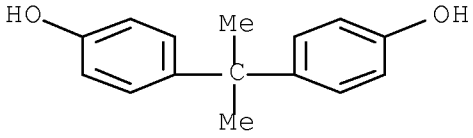
CM 3

CRN 92-88-6
CMF C12 H10 O2



CM 4

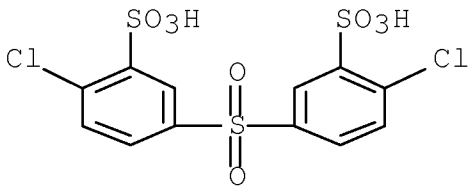
CRN 80-05-7
CMF C15 H16 O2



RN 916849-44-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

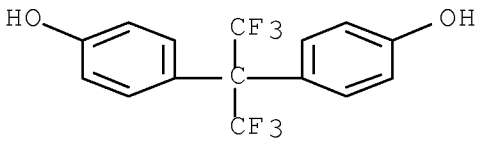
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

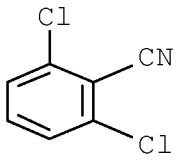
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



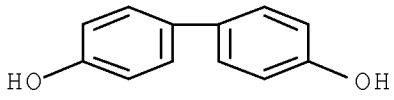
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

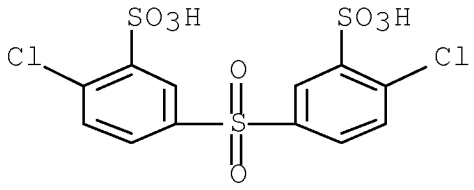
CRN 92-88-6
CMF C12 H10 O2



RN 916849-45-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 4,4'-cyclohexylidenebis[phenol] and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

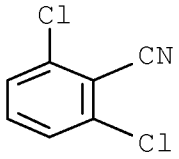
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

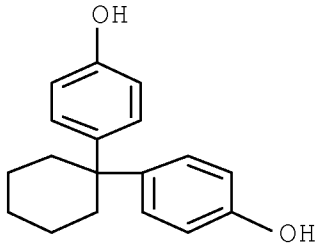
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



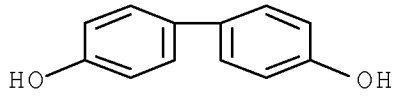
CM 3

CRN 843-55-0
CMF C18 H20 O2



CM 4

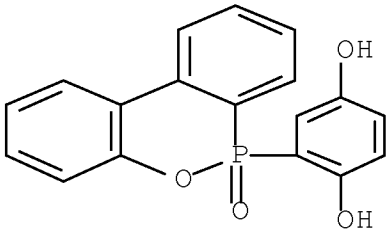
CRN 92-88-6
CMF C12 H10 O2



RN 916849-47-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

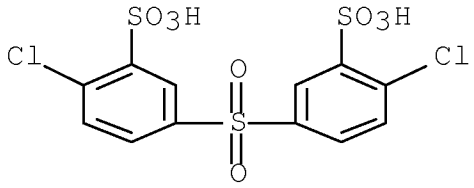
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

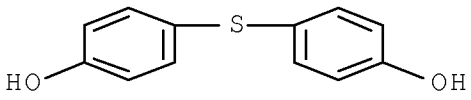
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

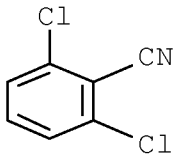
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



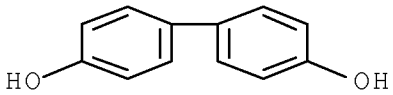
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

CRN 92-88-6
CMF C12 H10 O2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST sulfo heat crosslinkable polymer electrolyte membrane electrode fuel cell
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfo-containing, heat-crosslinkable group-introduced;
sulfo-containing heat-crosslinkable polymers for polymer

electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polythioethers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polysulfone-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Fuel cells
(polymer electrolyte; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-polythioether-, sulfo-containing, heat-crosslinkable group-introduced; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Ionic conductors
(protonic; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT Fuel cell electrolytes
(sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

IT Crosslinking
(thermal; sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)
IT 624-65-7DP, 1-Chloro-2-propyne, reaction products with sulfo-containing
polymers 2200-91-1DP, 4-Ethynylphenol, reaction products with sulfo-containing polymers 2628-17-3DP, 4-Hydroxystyrene, reaction products with sulfo-containing polymers 916849-36-0DP, reaction products with chloropropyne 916849-36-0DP, reaction products with ethynylphenol 916849-41-7DP, reaction products with ethynylphenol or hydroxystyrene 916849-42-8DP, reaction products with ethynylphenol 916849-43-9DP, reaction products with ethynylphenol 916849-44-0DP, reaction products with ethynylphenol 916849-45-1DP, reaction products with ethynylphenol 916849-47-3DP, reaction products with ethynylphenol
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing heat-crosslinkable polymers for polymer electrolyte membranes and membrane/electrode assembly in fuel cells)

L28 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:90912 HCAPLUS Full-text
DN 148:172159
TI Polymer electrolyte membrane, its manufacture, membrane-electrode assembly and fuel cell using the electrolyte membrane, and method for evaluating ion conductivity of polymer electrolyte membrane
IN Ishitobi, Masamitsu; Nodono, Mitsunori; Yamashita, Yasuhiro
PA Sumitomo Chemical Company, Limited, Japan
SO PCT Int. Appl., 43pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2008010605	A1	20080124	WO 2007-JP64623	20070719

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS,

KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY,
MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM,
SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA,
ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK,
TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

JP 2008066291 A 20080321 JP 2007-189777 200707 20

PRAI JP 2006-198573 A 20060720
JP 2006-215992 A 20060808

AB The polymer electrolyte membrane having a micro-phase separation structure, is manufactured by vapg. a solvent from a solution containing a polymer electrolyte having an ion conducting group; where in the evaporation step, time from the start to the completion of the evaporation of the solvent is limited to ≤60 min. The membrane -electrode assembly has the above polymer electroltye membrane arranged between a pair of electrode catalyst layer. The fuel cell has the polymer electrolyte membrane between a cathode and an anode. A method for valuating ion conductivity of the polymer electrolyte membrane is also disclosed.

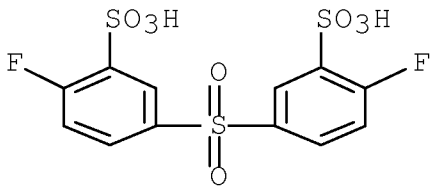
IT 1002110-12-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membranes in membrane-electrode assemblies for fuel cells)

RN 1002110-12-4 HCAPLUS

CN Benzenesulfonic acid, 2,5-dihydroxy-, potassium salt (1:1), polymer with potassium 3,3'-sulfonylbis[6-fluorobenzenesulfonate] (2:1), 1,1'-sulfonylbis[4-fluorobenzene] and 4,4'-sulfonylbis[phenol] (CA INDEX NAME)

CM 1

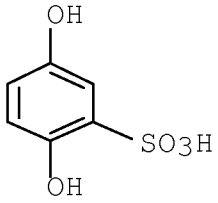
CRN 816417-98-8
CMF C12 H8 F2 O8 S3 . 2 K



● 2 K

CM 2

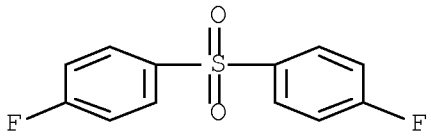
CRN 21799-87-1
CMF C6 H6 O5 S . K



● K

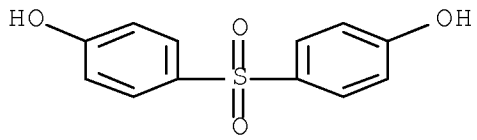
CM 3

CRN 383-29-9
CMF C12 H8 F2 O2 S



CM 4

CRN 80-09-1
CMF C12 H10 O4 S



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polymer electrolyte membrane electrode assembly fuel cell; ion cond evaluation polymer electrolyte membrane fuel cell
IT Fuel cell electrodes
Fuel cell electrolytes
Fuel cells
Polymer electrolytes
(manufacture of polymer electrolyte membranes in membrane-electrode assemblies for fuel cells)
IT 1002110-12-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membranes in membrane-electrode assemblies for fuel cells)
IT 67-68-5, Dimethyl sulfoxide, processes
RL: PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(manufacture of polymer electrolyte membranes in membrane-electrode assemblies for fuel cells)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L28 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2007:618693 HCAPLUS Full-text
DN 147:34462
TI Membrane electrode assemblies, polymer electrolyte fuel cells, and their manufacture, and portable electronic appliances
IN Uete, Takao; Shimoyama, Naoki; Adachi, Shinya
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 28pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007141832	A	20070607	JP 2006-287208	200610 23

PRAI JP 2005-306584 A 20051021

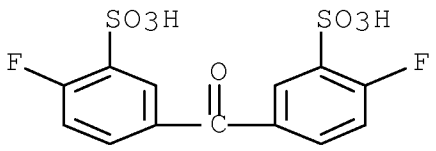
AB The title membrane electrode assembly (MEA) is equipped with an ionic group-containing hydrocarbon-type polymer film between the electrolyte membrane and each electrode catalyst layer, where ≥1 of the polymer films have larger area than their neighboring electrode catalyst layer. The MEA is manufactured by forming an ionic group-containing hydrocarbon-type polymer film containing a plasticizer on an anode and/or cathode catalyst layers and/or an electrolyte membrane; bonding the integrated polymer with an electrolyte membrane and/or electrode catalyst layer which may have the polymer film; and then removing the plasticizer from the film. The fuel cell, especially, direct methanol fuel cells, equipped with the MEA provides high performance for long time.

IT 938169-85-8DP, proton exchanged
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)

RN 938169-85-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2), polymer with bis(4-fluorophenyl)methanone, 4,4'-(9H-fluoren-9-ylidene)bis[phenol] and potassium carbonate (2:1) (CA INDEX NAME)

CM 1

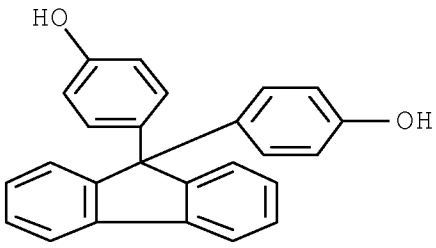
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

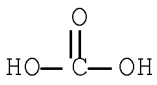
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

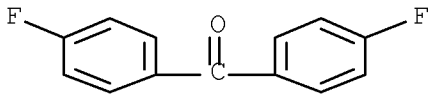
CRN 584-08-7
CMF C H2 O3 . 2 K



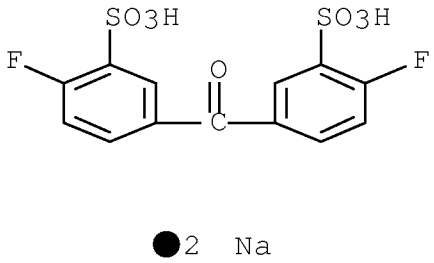
●2 K

CM 4

CRN 345-92-6
CMF C13 H8 F2 O



IT 210531-45-6P, Disodium
3,3'-disulfonate-4,4'-difluorobenzophenone
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization of; manufacture of membrane electrode
assemblies and polymer electrolyte fuel cells for portable electronic appliances)
RN 210531-45-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2) (CA INDEX NAME)



●2 Na

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST hydrocarbon ionic polymer membrane electrode assembly fuel cell
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(fluorine- and sulfo-containing, ionomers; manufacture of membrane

electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Electric apparatus
(manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, aromatic, fluorine-containing, cardo, sulfo-containing; manufacture
of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Fluoropolymers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfo-containing, ionomers; manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Fluoropolymers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketone-, aromatic, cardo, sulfo-containing; manufacture of
membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Cardo polymers
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polyketones, aromatic, fluorine-containing, sulfo-containing;
manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-, aromatic, fluorine-containing, cardo, sulfo-containing; manufacture
of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT Fuel cells
(polymer electrolyte, direct methanol; manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT 938169-85-8DP, proton exchanged
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of membrane electrode assemblies and polymer

electrolyte fuel cells for portable electronic appliances)
IT 56-81-5, Glycerin, uses
RL: NUU (Other use, unclassified); USES (Uses)
(plasticizer; manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT 210531-45-6P, Disodium 3,3'-disulfonate-4,4'-difluorobenzophenone
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization of; manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)
IT 345-92-6, 4,4'-Difluorobenzophenone
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of; manufacture of membrane electrode assemblies and polymer electrolyte fuel cells for portable electronic appliances)

L28 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2007:328323 HCAPLUS Full-text
DN 146:362055
TI Membrane-electrode assembly, polymer electrolyte fuel cell, and their manufacture
IN Shimoyama, Naoki; Uete, Takao; Kono, Satoshi; Adachi, Masaya; Miyawaki, Hisao
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 26pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007073324	A	20070322	JP 2005-258859	200509 07

PRAI JP 2005-258859 20050907
AB The membrane-electrode assembly has an anode, a cathode, an electrolyte membrane, and a hydrocarbon based polymer coating film between the electrode and the electrolyte membrane; where the thickness of the hydrocarbon based polymer coating film on th anode side is larger than that on the cathode side. The membrane-electrode assembly is manufactured by arranging a plasticizer-containing hydrocarbon based polymer on an electrode catalyst layer, sticking

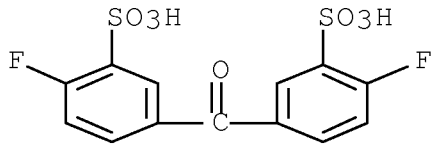
the hydrocarbon based polymer film with the electrolyte membrane , and removing the plasticizer. The fuel cell is constituted by using the above membrane-electrode assembly.

IT 862772-94-9 862773-00-0
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)

RN 862772-94-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2), polymer with bis(4-fluorophenyl)methanone and 4,4'-(9H-fluoren-9-ylidene)bis[phenol] (CA INDEX NAME)

CM 1

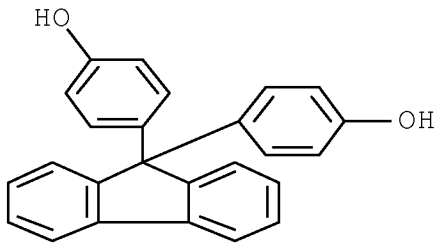
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

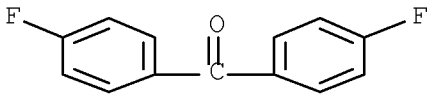
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

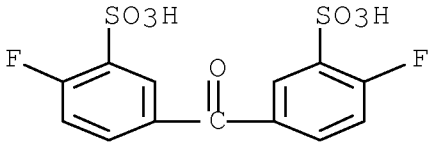
CRN 345-92-6
CMF C13 H8 F2 O



RN 862773-00-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2), polymer with bis(4-fluorophenyl)methanone and 4,4'-(diphenylmethylene)bis[phenol] (CA INDEX NAME)

CM 1

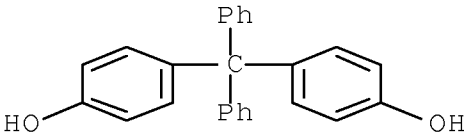
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

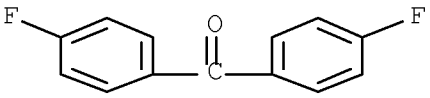
CM 2

CRN 1844-01-5
CMF C25 H20 O2



CM 3

CRN 345-92-6
CMF C13 H8 F2 O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel cell membrane electrode assembly manuf hydrocarbon polymer coating
IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)
IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)
IT Fuel cell electrodes

Fuel cell electrolytes
Fuel cells
(structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)

IT Carbon fibers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)

IT 7440-06-4, Platinum, uses 12779-05-4
RL: CAT (Catalyst use); USES (Uses)
(structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)

IT 862772-94-9 862773-00-0
RL: MOA (Modifier or additive use); USES (Uses)
(structure and manufacture of membrane-electrode assemblies containing hydrocarbon based polymer films between electrodes and electrolyte membranes for polymer electrolyte fuel cells)

L28 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2007:284308 HCAPLUS Full-text
DN 146:320203
TI Membrane-electrode assemblies containing antioxidants and light stabilizers, and fuel cells using them
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamashita, Masahiro
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 53pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007066882	A	20070315	JP 2006-187809	20060707

PRAI JP 2005-223992 A 20050802

AB The assemblies comprise proton-conductive hydrocarbon polymer membranes containing phosphite antioxidants, thioether antioxidants, and/or hindered amine light stabilizers, and electrode catalyst

layers containing phenolic antioxidants. Preferably, the membranes sulfo-containing aromatic polysulfones, aromatic polyether-polysulfones, etc.

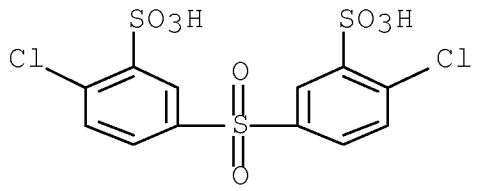
IT 267877-35-0DP, hydrolyzed 627538-51-6DP, hydrolyzed 681035-31-4DP, 4,4'-Biphenol-2,6-dichlorobenzonitrile-disodium 4,4'-dichloro-3,3'-disulfodiphenyl sulfone copolymer, hydrolyzed 681035-35-8DP, hydrolyzed 681035-36-9DP, hydrolyzed 864062-86-2DP, hydrolyzed 916849-36-0DP, hydrolyzed 916849-42-8DP, hydrolyzed 916849-45-1DP, hydrolyzed 929035-11-0DP, hydrolyzed 929035-12-1DP, hydrolyzed 929035-13-2DP, hydrolyzed 929035-14-3DP, hydrolyzed 929035-15-4DP, hydrolyzed
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

RN 267877-35-0 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 1,1'-sulfonylbis[4-chlorobenzene] (CA INDEX NAME)

CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na

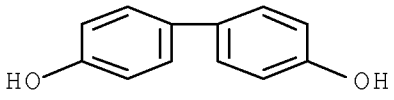


●2 Na

CM 2

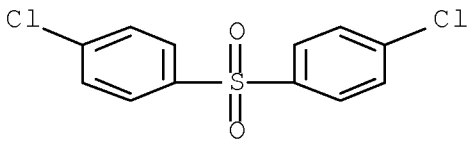
CRN 92-88-6

CMF C12 H10 O2



CM 3

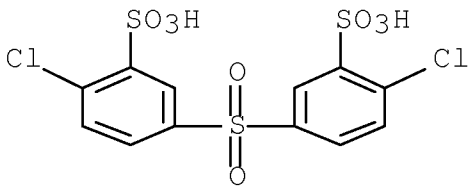
CRN 80-07-9
CMF C12 H8 Cl2 O2 S



RN 627538-51-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

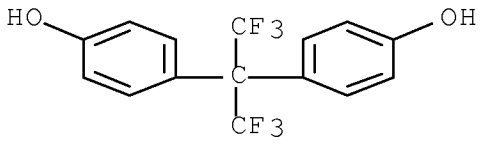
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

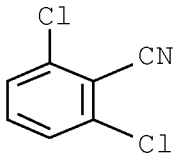
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



CM 3

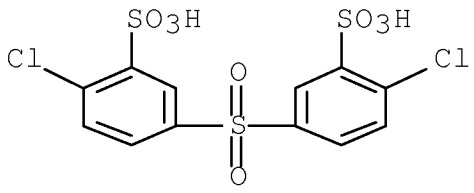
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 681035-31-4 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

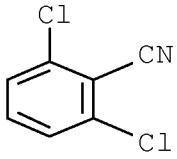
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

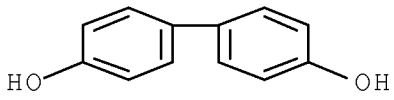
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

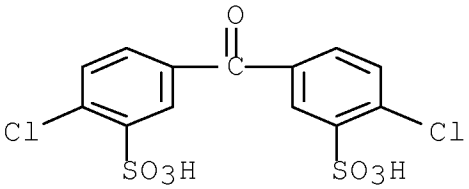
CRN 92-88-6
CMF C12 H10 O2



RN 681035-35-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

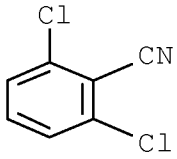
CRN 57004-46-3
CMF C13 H8 Cl2 O7 S2 . 2 Na



●2 Na

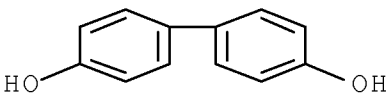
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

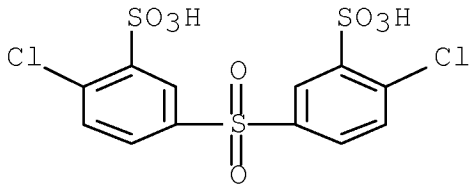
CRN 92-88-6
CMF C12 H10 O2



RN 681035-36-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-(1-methylethylidene)bis[phenol] (CA INDEX NAME)

CM 1

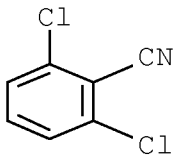
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

CM 2

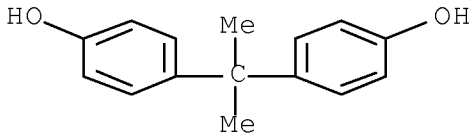
CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 80-05-7

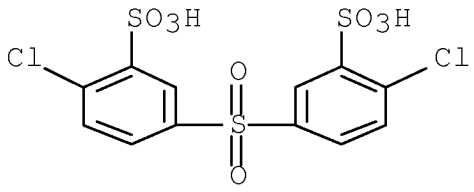
CMF C15 H16 O2



RN 864062-86-2 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-(9H-fluoren-9-ylidene)bis[phenol] (CA INDEX NAME)

CM 1

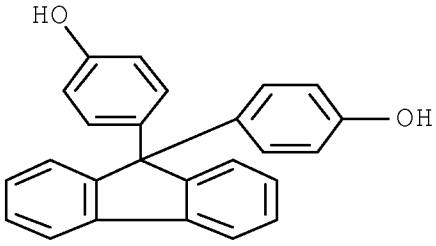
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

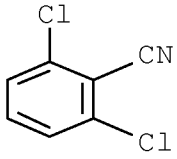
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

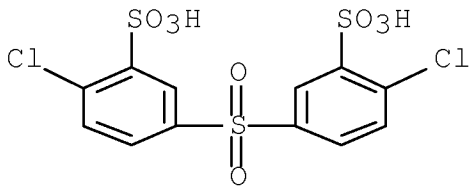
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 916849-36-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-oxybis[phenol] (CA INDEX NAME)

CM 1

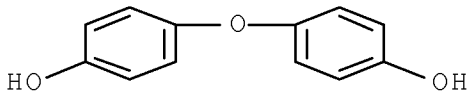
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

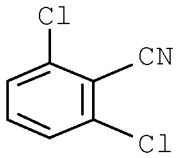
CM 2

CRN 1965-09-9
CMF C12 H10 O3



CM 3

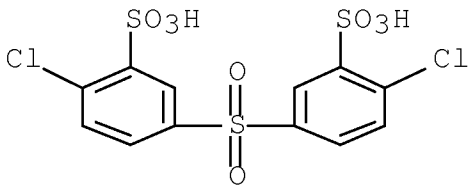
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 916849-42-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[benzenethiol] (CA INDEX NAME)

CM 1

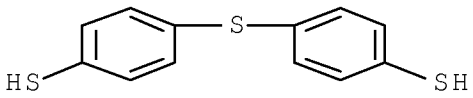
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

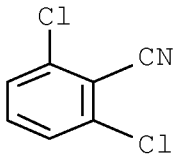
CM 2

CRN 19362-77-7
CMF C12 H10 S3



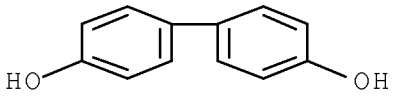
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

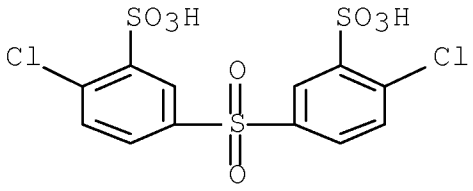
CRN 92-88-6
CMF C12 H10 O2



RN 916849-45-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 4,4'-cyclohexylidenebis[phenol] and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

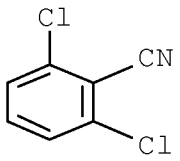
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

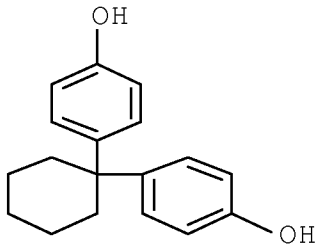
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



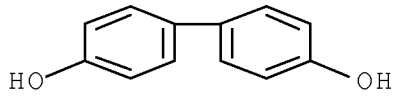
CM 3

CRN 843-55-0
CMF C18 H20 O2



CM 4

CRN 92-88-6
CMF C12 H10 O2

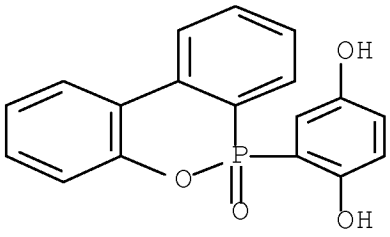


RN 929035-11-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol

and 4,4'-sulfonylbis[phenol] (CA INDEX NAME)

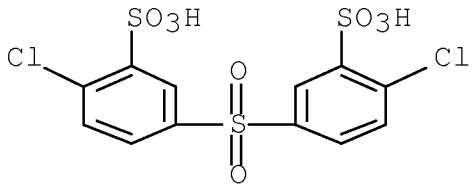
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

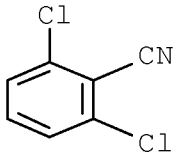
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

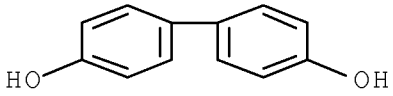
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



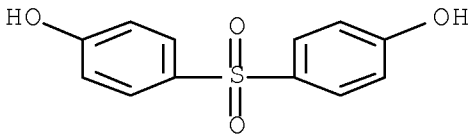
CM 4

CRN 92-88-6
CMF C12 H10 O2



CM 5

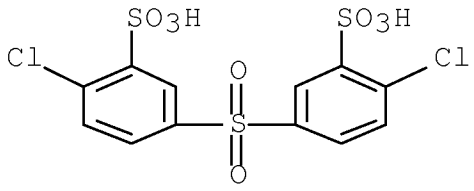
CRN 80-09-1
CMF C12 H10 O4 S



RN 929035-12-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-sulfonylbis[phenol] (CA INDEX NAME)

CM 1

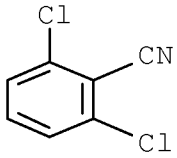
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

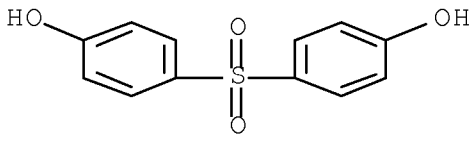
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 80-09-1
CMF C12 H10 O4 S

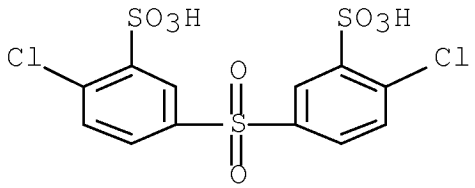


RN 929035-13-2 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile and 4,4'-thiobis[benzenethiol] (CA INDEX NAME)

CM 1

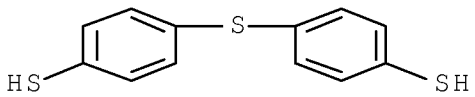
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

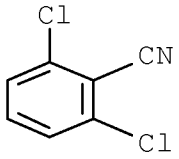
CM 2

CRN 19362-77-7
CMF C12 H10 S3



CM 3

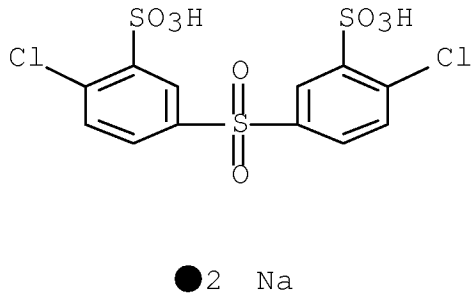
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 929035-14-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 4,4'-cyclohexylidenebis[phenol] and 2,6-dichlorobenzonitrile (CA INDEX NAME)

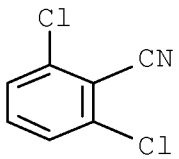
CM 1

CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



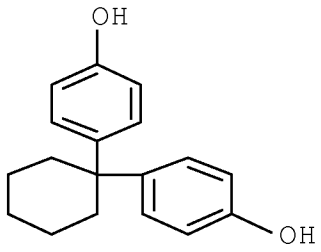
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

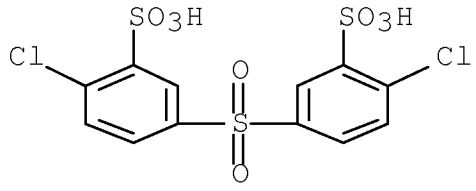
CRN 843-55-0
CMF C18 H20 O2



RN 929035-15-4 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and bis(4-chlorophenyl)methanone (CA INDEX NAME)

CM 1

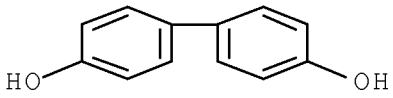
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

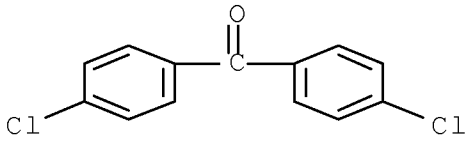
CM 2

CRN 92-88-6
CMF C12 H10 O2



CM 3

CRN 90-98-2
CMF C13 H8 Cl2 O



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer electrolyte fuel cell phosphite antioxidant; thioether antioxidant fuel cell electrolyte membrane; hindered amine light stabilizer fuel cell; phenolic antioxidant fuel cell electrode catalyst; sulfo arom polysulfone fuel cell electrolyte

IT Thioethers
RL: MOA (Modifier or additive use); USES (Uses)
(antioxidants; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT Polyoxyalkylenes, uses
RL: CAT (Catalyst use); USES (Uses)
(fluorine- and sulfo-containing, ionomers, Nafion, binder for electrode catalyst layers; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT Light stabilizers
(hindered amines; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel

cells)
IT Amines, uses
RL: MOA (Modifier or additive use); USES (Uses)
(hindered, light stabilizers; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer
electrolyte fuel cells)
IT Fuel cell electrodes
Fuel cell electrolytes
(membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)
IT Antioxidants
(phenolic, for catalyst layers; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)
IT Polyethers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(phosphite-containing, antioxidants; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer
electrolyte fuel cells)
IT Antioxidants
(phosphites or thioethers; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer
electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polycarbonate-, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer
electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polycarbonate-polyether-, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers
for polymer electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polycarbonate-polysulfone-, sulfo-containing; membrane
-electrode assemblies containing antioxidants and light
stabilizers
for polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyether-, cardo, sulfo-containing; membrane-electrode
assemblies containing antioxidants and light stabilizers for
polymer
electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyether-, fluorine-containing, sulfo-containing; membrane
-electrode assemblies containing antioxidants and light
stabilizers
for polymer electrolyte fuel cells)
IT Polycarbonates, uses
Polysulfones, uses
Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyether-, sulfo-containing; membrane-electrode
assemblies containing antioxidants and light stabilizers for
polymer
electrolyte fuel cells)
IT Fluoropolymers, uses
Polycarbonates, uses
Polythioethers
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyether-polysulfone-, sulfo-containing; membrane
-electrode assemblies containing antioxidants and light
stabilizers
for polymer electrolyte fuel cells)
IT Cardo polymers
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polyether-polysulfones, sulfo-containing; membrane
-electrode assemblies containing antioxidants and light
stabilizers

for polymer electrolyte fuel cells)
IT Polysulfones, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-polythioether-, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers
for polymer electrolyte fuel cells)
IT Fuel cells
(polymer electrolyte; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte
fuel cells)
IT Fluoropolymers, uses
RL: CAT (Catalyst use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers, Nafion, binder for electrode catalyst layers;
membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)
IT Ionomers
RL: CAT (Catalyst use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing, Nafion, binder for
electrode catalyst layers;
membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, cardo, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer
electrolyte fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, fluorine-containing, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers
for polymer electrolyte fuel cells)
IT Polyethers, uses
Polyethers, uses

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-polythioether-, sulfo-containing; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT Ionic conductors
(protonic, electrolyte membranes; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT 1455-42-1D, 3,9-Bis(2-hydroxy-1,1-dimethylethyl)-2,4,8,10-tetraoxaspiro[5.5]undecane, mixed ester with butanetetracarboxylic acid and pentamethylpiperidinol 1703-58-8D, 1,2,3,4-Butanetetracarboxylic acid, mixed ester with pentamethylpiperidinol and bis[(hydroxy)dimethylethyl]tetraoxaspiroundecane 2403-89-6D, 1,2,2,6,6-Pentamethyl-4-piperidinol, mixed ester with butanetetracarboxylic acid and bis[(hydroxy)dimethylethyl]tetraoxaspiroundecane 6683-19-8, Irganox 1010 26063-63-8, JPH 3800 29598-76-3, Pentaerythritoltetrakis(3-laurylthiopropionate) 115055-30-6, ADK Stab LA 63P
RL: MOA (Modifier or additive use); USES (Uses)
(antioxidant; membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

IT 267877-35-0DP, hydrolyzed 627538-51-6DP, hydrolyzed 681035-31-4DP, 4,4'-Biphenol-2,6-dichlorobenzonitrile-disodium 4,4'-dichloro-3,3'-disulfodiphenyl sulfone copolymer, hydrolyzed 681035-35-8DP, hydrolyzed 681035-36-9DP, hydrolyzed 864062-86-2DP, hydrolyzed 916849-36-0DP, hydrolyzed 916849-42-8DP, hydrolyzed 916849-45-1DP, hydrolyzed 929035-11-0DP, hydrolyzed 929035-12-1DP, hydrolyzed 929035-13-2DP, hydrolyzed 929035-14-3DP, hydrolyzed 929035-15-4DP, hydrolyzed

RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membrane-electrode assemblies containing antioxidants and light stabilizers for polymer electrolyte fuel cells)

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AN 2007:281657 HCAPLUS Full-text
DN 146:341014
TI Manufacture of sulfo-containing polymers, compositions containing the polymers, cation exchangers made of the polymers, and polymer-electrolyte fuel cell membrane-electrode assemblies (MEA) employing the cation exchangers
IN Kitamura, Kota; Sakaguchi, Yoshimitsu
PA Toyobo Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 29pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

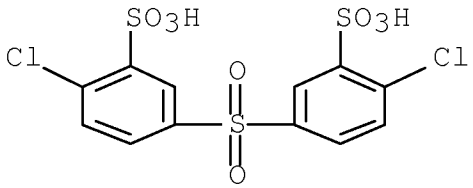
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007063533	A	20070315	JP 2006-187807	20060607
PRAI JP 2005-223993	A	20050802		

AB Sulfo-containing polymers have repeating units [[Z2Ar1(Z1Ar2Z1Ar3)n(Z1Ar2Z1Ar4)m(Z3Ar6Z3Ar7)o]Z2Ar5]p [Ar1 = Ar3, Ar4; Ar2 = biphenylene, Q1, Q2; Ar4 = divalent aromatic group having electron-withdrawing group and sulfo (salts/derivs.); Ar5 = Q3; W = O, S, C(Me)2, cyclohexyl, etc.; q ≥1; Ar3 = electron-withdrawing divalent aromatic group; Ar6 = divalent aromatic group other than Ar2; Ar7 = Ar3, Ar4; Z1-3 = O, S; n ≥1; m ≥1; p ≥1; o ≥0], wherein units of (Z1Ar2Z1Ar3), (Z1Ar2Z1Ar4), and (Z3Ar6Z3Ar7) are in random arrangement or form continuous segments. The polymers are manufactured by reaction of oligomers having units of (Z1Ar2Z1Ar3), (Z1Ar2Z1Ar4), and optionally (Z3Ar6Z3Ar7) and having reactive end groups with compds. containing Q3. The polymers show small expansion in water and high bond strength with electrode catalyst layers.
IT 916849-41-7P 916849-42-8P 916849-43-9P
916849-44-0P 916849-45-1P 916849-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of proton-exchangeable sulfo-containing poly(thio)ethers for
MEA of polymer-electrolyte fuel cells)

RN 916849-41-7 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[phenol] (CA INDEX NAME)

CM 1

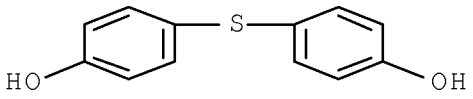
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

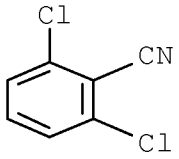
CM 2

CRN 2664-63-3
CMF C12 H10 O2 S



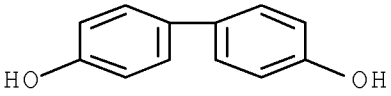
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

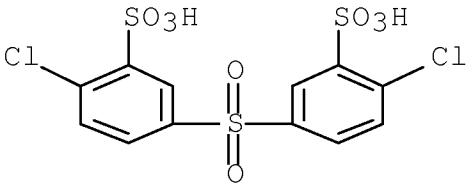
CRN 92-88-6
CMF C12 H10 O2



RN 916849-42-8 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-thiobis[benzenethiol] (CA INDEX NAME)

CM 1

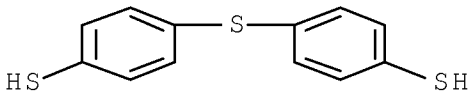
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

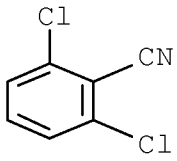
CM 2

CRN 19362-77-7
CMF C12 H10 S3



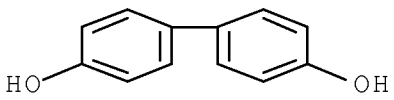
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

CRN 92-88-6
CMF C12 H10 O2

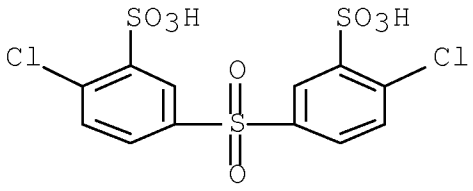


RN 916849-43-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and

4,4'-(1-methylethylidene)bis[phenol] (CA INDEX NAME)

CM 1

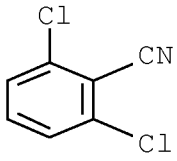
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

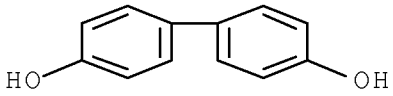
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



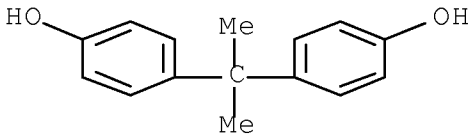
CM 3

CRN 92-88-6
CMF C12 H10 O2



CM 4

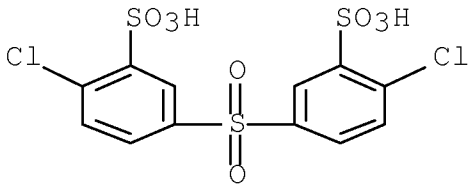
CRN 80-05-7
CMF C15 H16 O2



RN 916849-44-0 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

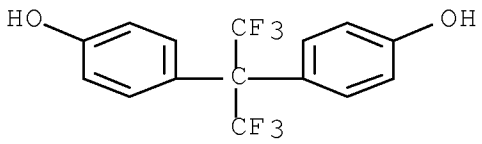
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

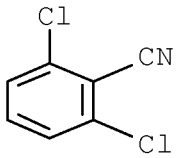
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



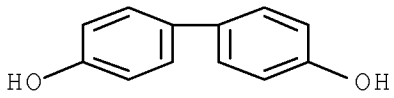
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

CRN 92-88-6
CMF C12 H10 O2

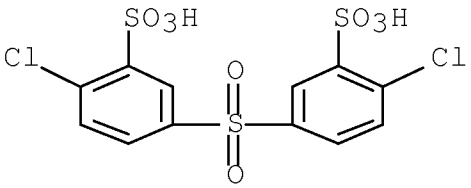


RN 916849-45-1 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2),

polymer with [1,1'-biphenyl]-4,4'-diol, 4,4'-cyclohexylidenebis[phenol] and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

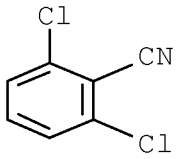
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

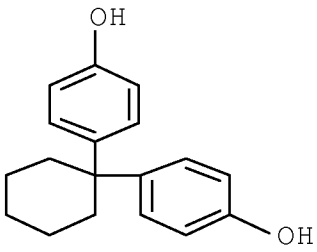
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



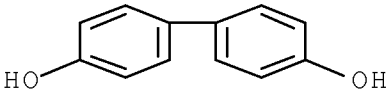
CM 3

CRN 843-55-0
CMF C18 H20 O2



CM 4

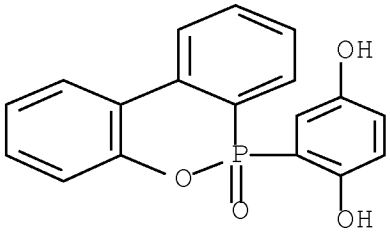
CRN 92-88-6
CMF C12 H10 O2



RN 916849-47-3 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

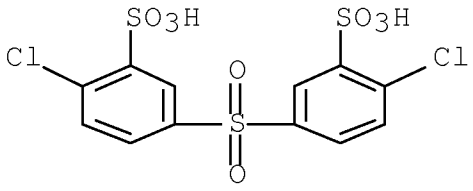
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

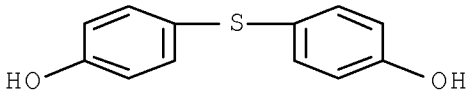
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

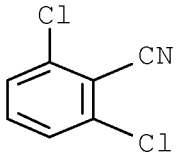
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



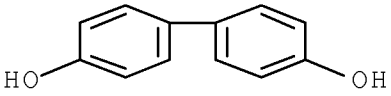
CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

CRN 92-88-6
CMF C12 H10 O2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Cation exchange membranes
Fuel cell electrolytes
Polyelectrolytes
(manufacture of proton-exchangeable sulfo-containing poly(thio)ethers for
MEA of polymer-electrolyte fuel cells)
IT 916849-41-7P 916849-42-8P 916849-43-9P
916849-44-0P 916849-45-1P 916349-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of proton-exchangeable sulfo-containing poly(thio)ethers for
MEA of polymer-electrolyte fuel cells)

L28 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:759900 HCAPLUS Full-text
DN 145:214305
TI Fuel cell electrodes with metal catalyst layers containing alkylcellulose binders and fuel cells
IN Adachi, Masaya; Kono, Satoshi; Kitai, Masayuki
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006202598	A	20060803	JP 2005-12620	20050120
PRAI JP 2005-12620		20050120		

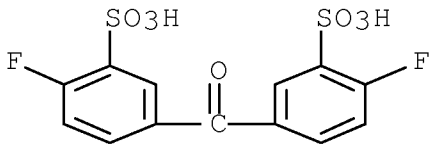
AB The electrodes are equipped with catalyst layers consisting of (A) metal particles and/or metal-carrying particles and (B) binders including alkylcellulose having ionic groups. Preferably, the anodes are equipped with the said catalyst layers and more preferably, contain sulfonated aromatic hydrocarbon polymer membranes containing components derived from 9,9-bis(4-hydroxyphenyl)fluorene and/or 4,4'-dihydroxytetraphenylmethane. The batteries may be those operated by charging water-containing liquid fuel to the anodes.

IT 862772-94-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(electrolyte; fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)

RN 862772-94-9 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2), polymer with bis(4-fluorophenyl)methanone and 4,4'-(9H-fluoren-9-ylidene)bis[phenol] (CA INDEX NAME)

CM 1

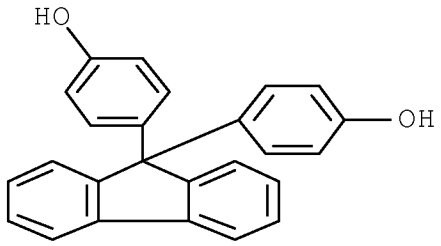
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

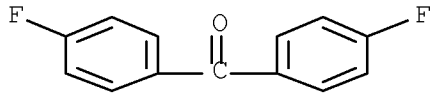
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

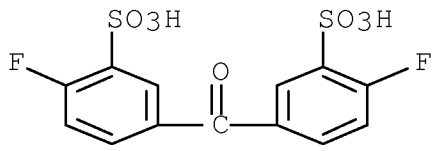
CRN 345-92-6
CMF C13 H8 F2 O



IT 210531-45-6P, Disodium
3,3'-disulfonate-4,4'-difluorobenzophenone
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)

RN 210531-45-6 HCAPLUS

CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2) (CA INDEX NAME)



●2 Na

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST fuel cell electrode metal catalyst layer binder; alkylcellulose ionic binder fuel cell electrode
IT Fuel cells
(aqueous liquid fuel-operated; fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT Fuel cell anodes
Fuel cell electrodes
(fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT 9086-60-6, Carboxymethylcellulose ammonium salt
RL: CAT (Catalyst use); USES (Uses)
(DN 800H; fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT 862772-94-9P
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(electrolyte; fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT 647838-24-2, Hispec 6000 874384-40-4, TEC 10V50E 904299-74-7, Hispec 7000
RL: CAT (Catalyst use); USES (Uses)
(fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT 210531-45-6P, Disodium 3,3'-disulfonate-4,4'-difluorobenzophenone
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)
IT 345-92-6, 4,4'-Difluorobenzophenone
RL: RCT (Reactant); RACT (Reactant or reagent)

(fuel cell electrodes with metal catalyst layers containing ionic alkylcellulose binders)

L28 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:436788 HCAPLUS Full-text
DN 144:471396
TI Membrane-electrode assembly for fuel cell
IN Kanaoka, Nagayuki; Iguchi, Masaru; Sohma, Hiroshi
PA Honda Motor Co., Ltd., Japan
SO PCT Int. Appl., 61 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2006048942	A1	20060511	WO 2004-JP16501	20041101
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
CA 2579014	A1	20060511	CA 2004-2579014	20041101
DE 112004003007	T5	20071025	DE 2004-112004003007	20041101
US 20080070085	A1	20080320	US 2006-596648	20061116
PRAI WO 2004-JP16501	W	20041101		

AB A membrane-electrode assembly for a solid polymer fuel cell is excellent in hot water resistance, oxidation resistance and dimensional stability at low temps. and can provide excellent power generation performance even under low-temperature environment. The membrane-electrode assembly has an electrolyte membrane held between

a pair of electrode catalyst layer; where polymer electrolyte membrane comprises a sulfonated product of a polyarylene polymer comprising repeating units of the formula (C6H3Z1R1)n (Z1 = divalent atom or organic group, or direct bond; and R1 = aromatic group or its derivative; and n is and integer).

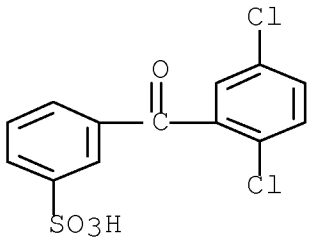
IT 886598-59-0 886598-60-3 886598-61-4
886598-62-5 886598-63-6
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)

RN 886598-59-0 HCAPLUS

CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with 2,6-dichlorobenzonitrile and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

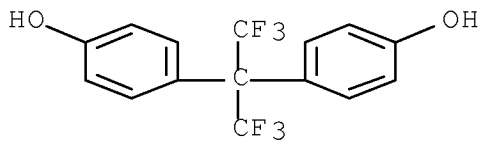
CM 1

CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



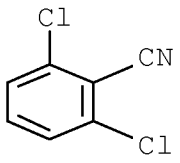
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



CM 3

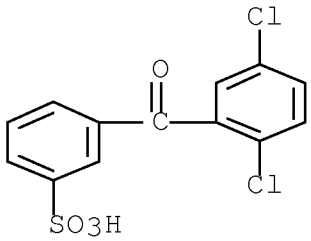
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 886598-60-3 HCAPLUS
CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with 2,6-dichlorobenzonitrile and 4,4'-(9H-fluoren-9-ylidene)bis[phenol] (9CI) (CA INDEX NAME)

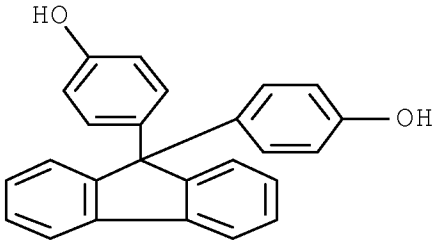
CM 1

CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



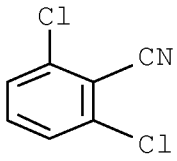
CM 2

CRN 3236-71-3
CMF C25 H18 O2



CM 3

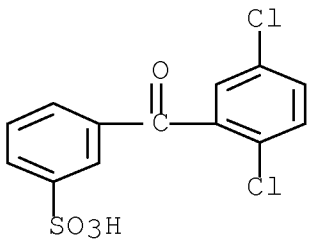
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 886598-61-4 HCAPLUS
CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with 2,6-dichlorobenzonitrile, 4,4'-(9H-fluoren-9-ylidene)bis[phenol] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (9CI) (CA INDEX NAME)

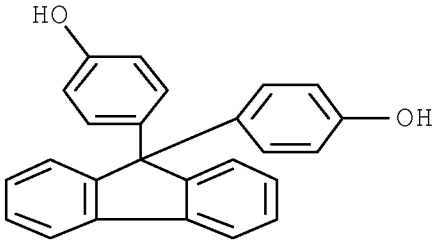
CM 1

CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



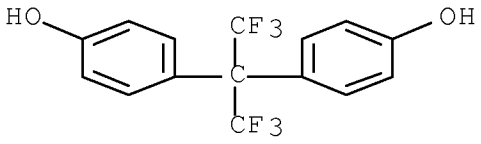
CM 2

CRN 3236-71-3
CMF C25 H18 O2



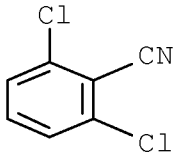
CM 3

CRN 1478-61-1
CMF C15 H10 F6 O2



CM 4

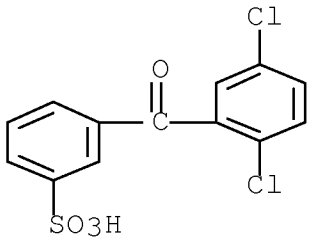
CRN 1194-65-6
CMF C7 H3 Cl2 N



RN 886598-62-5 HCAPLUS
CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (9CI) (CA INDEX NAME)

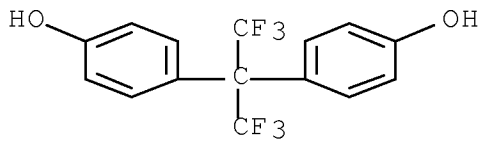
CM 1

CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



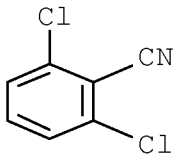
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



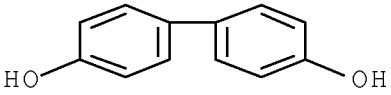
CM 3

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 4

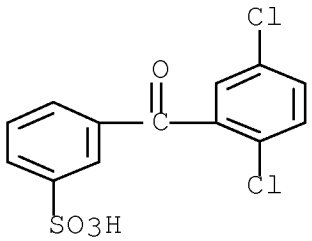
CRN 92-88-6
CMF C12 H10 O2



RN 886598-63-6 HCAPLUS
CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with bis(4-chlorophenyl)methanone and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (9CI) (CA INDEX NAME)

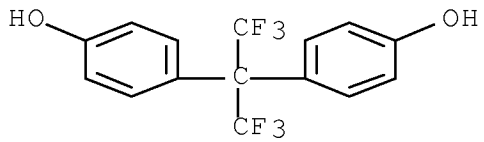
CM 1

CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



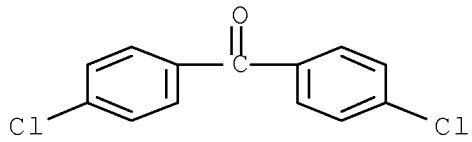
CM 2

CRN 1478-61-1
CMF C15 H10 F6 O2



CM 3

CRN 90-98-2
CMF C13 H8 Cl2 O



IC ICM H01M008-02
ICS C08G075-00; C08G065-40; C08G061-12
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Fuel cell electrodes
Fuel cell electrolytes
(electrolyte membranes containing sulfonated polyarylene

polymers for fuel cells)
IT Carbon black, uses
Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT 9002-84-0, PTFE
RL: DEV (Device component use); USES (Uses)
(electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
IT 886598-59-0 886598-60-3 886598-61-4
886598-62-5 886598-63-6
RL: DEV (Device component use); FMU (Formation, unclassified); FORM (Formation, nonpreparative); USES (Uses)
(electrolyte membranes containing sulfonated polyarylene polymers for fuel cells)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L28 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:117649 HCAPLUS Full-text
DN 144:195256
TI Polymer electrolyte fuel cell
IN Saito, Shin; Iwasaki, Katsuhiko
PA Sumitomo Chemical Co., Ltd., Japan
SO Can. Pat. Appl., 41 pp.
CODEN: CPXXEB
DT Patent

LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2513518	A1	20060130	CA 2005-2513518	20050726
	EP 1626453	A2	20060215	EP 2005-106807	20050725
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
	JP 2006066391	A	20060309	JP 2005-217020	20050727
	US 20060280999	A1	20061214	US 2005-189723	20050727
	KR 2006048879	A	20060518	KR 2005-69036	20050728
PRAI	JP 2004-223434	A	20040730		

AB The invention concerns a polymer electrolyte fuel cell comprising: a solid polymer electrolyte membrane containing an aromatic polymer electrolyte; an electrode comprising a catalyst layer and a gas diffusion layer as an anode and a cathode to be joined on both surfaces of this solid polymer electrolyte membrane; a gas sealing material to be disposed in a periphery of the gas diffusion layer; and a separator having a reaction gas flow field; wherein the gas diffusion layer surrounds the whole outer edge of the gas flow field of the separator and has a larger area than an area occupied by the outer edge of the gas flowfield of the separator is provided.

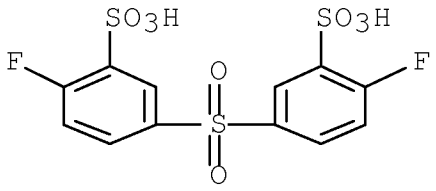
IT 875098-09-2P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte fuel cell)

RN 875098-09-2 HCAPLUS
CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-fluoro-, dipotassium salt, polymer with 2,5-dihydroxybenzenesulfonic acid, 1,1'-sulfonylbis[4-fluorobenzene] and 4,4'-sulfonylbis[phenol] (9CI) (CA INDEX NAME)

CM 1

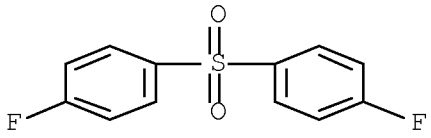
CRN 816417-98-8

CMF C12 H8 F2 O8 S3 . 2 K



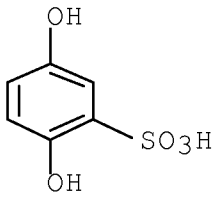
CM 2

CRN 383-29-9
CMF C12 H8 F2 O2 S



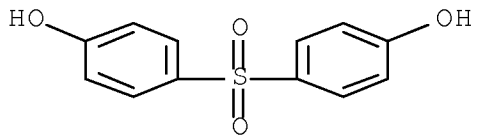
CM 3

CRN 88-46-0
CMF C6 H6 O5 S



CM 4

CRN 80-09-1
CMF C12 H10 O4 S



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT 24938-68-9P 875098-09-2P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte fuel cell)

L28 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:1149667 HCAPLUS Full-text
DN 143:424642
TI Solid polymer electrolyte composite membranes useful for fuel cells
IN Ishikawa, Junichi; Omi, Katsuhiko; Toriida, Masahiro; Fujiyama, Akiko; Takamatsu, Kuniyuki; Tamai, Masashi
PA Mitsui Chemicals Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005298564	A	20051027	JP 2004-113071	20040407

PRAI JP 2004-113071 20040407

AB The membranes comprise solid polymer electrolyte membranes composed of aromatic hydrocarbon polymers having protonic acid groups, and compound layers having basic functional groups on the surface of the membranes. The membranes show good protonic conductivity, low

methanol permeability, and improved adhesion to catalyst electrode layers.

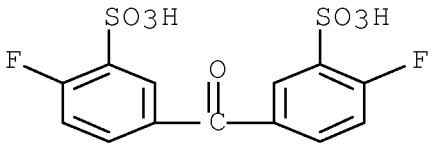
IT 515144-27-1DP, sodium-removed, complex with amines
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; solid polymer electrolyte composite membranes useful for fuel cells)

RN 515144-27-1 HCAPLUS

CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2), polymer with bis(4-fluorophenyl)methanone and 4,4'-methylenebis[2,6-dimethylphenol] (CA INDEX NAME)

CM 1

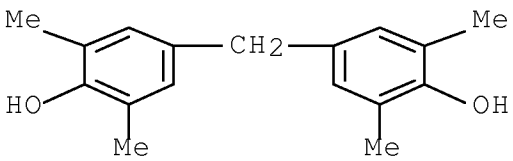
CRN 210531-45-6
CMF C13 H8 F2 O7 S2 . 2 Na



●2 Na

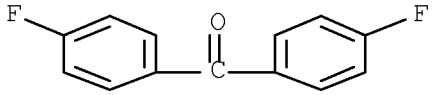
CM 2

CRN 5384-21-4
CMF C17 H20 O2

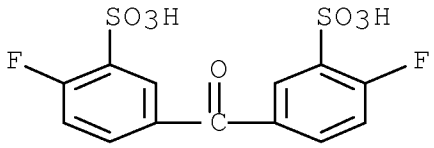


CM 3

CRN 345-92-6
CMF C13 H8 F2 O



IT 210531-45-6P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solid polymer electrolyte composite membranes useful for fuel cells)
RN 210531-45-6 HCAPLUS
CN Benzenesulfonic acid, 3,3'-carbonylbis[6-fluoro-, sodium salt (1:2) (CA INDEX NAME)



●2 Na

IC ICM C08J005-22
ICS C08G065-40; C08J007-04; H01B001-06; H01M008-02; H01M008-10; C08L101-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST solid polymer electrolyte composite membrane fuel cell; fluorobenzophenone fluorobenzenesulfonate carbonyl methyl hydroxyphenyl methane polymer; octyldiamine complex sulfonic acid polymer electrolyte
IT Polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

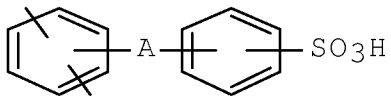
(polyether-, crosslinked; solid polymer electrolyte composite membranes useful for fuel cells)
IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-, crosslinked; solid polymer electrolyte composite membranes useful for fuel cells)
IT Ionic conductors
(protonic; solid polymer electrolyte composite membranes useful for fuel cells)
IT Fuel cell electrolytes
Polyelectrolytes
Solid electrolytes
(solid polymer electrolyte composite membranes useful for fuel cells)
IT 147-24-0DP, Diphenhydramine hydrochloride, complex with sulfonic acid-containing polyether-polyketones 515144-27-1DP, sodium-removed, complex with amines
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(crosslinked; solid polymer electrolyte composite membranes useful for fuel cells)
IT 210531-45-6P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solid polymer electrolyte composite membranes useful for fuel cells)
IT 373-44-4DP, 1,8-Octanediamine, complex with crosslinked sulfonic acid-containing polyether-polyketones 9003-47-8DP, Polyvinylpyridine, complex with crosslinked sulfonic acid-containing polyether-polyketones
129825-84-9DP, Dodecanediamine, complex with crosslinked sulfonic acid-containing polyether-polyketones
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(solid polymer electrolyte composite membranes useful for fuel cells)
IT 345-92-6, 4,4'-Difluorobenzophenone
RL: RCT (Reactant); RACT (Reactant or reagent)
(solid polymer electrolyte composite membranes useful for fuel cells)

L28 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2004:402980 HCAPLUS Full-text
DN 140:409627
TI Electrode structure for polymer electrolyte fuel cells

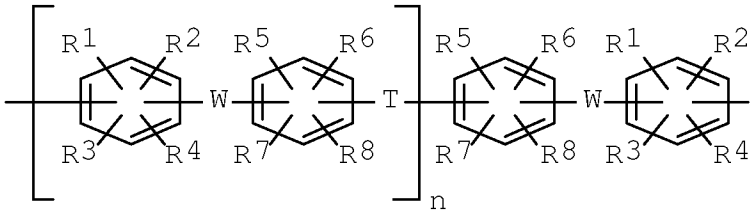
IN Sohma, Hiroshi; Iguchi, Masaru; Kanaoka, Nagayuyki; Kaji, Hayato; Morikawa, Hiroshi; Mitsuta, Naoki
PA Honda Motor Co., Ltd., Japan
SO Eur. Pat. Appl., 26 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1420473	A1	20040519	EP 2003-26194	20031117
EP 1420473	B1	20060412		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
US 20040197632	A1	20041007	US 2003-714394	20031117
JP 2005158265	A	20050616	JP 2003-387362	20031118

PRAI JP 2002-333143 A 20021118
JP 2003-371047 A 20031030
GI



I



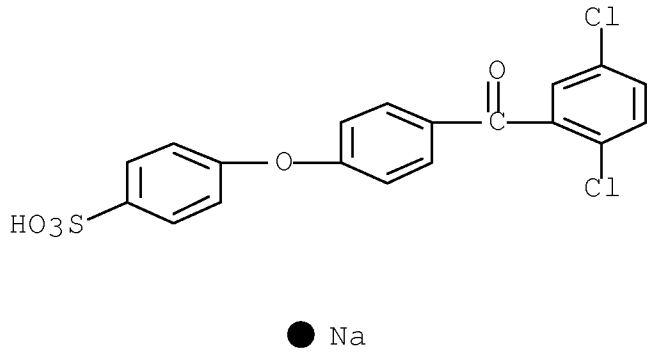
II

AB The present invention provides an electrode structure for polymer electrolyte fuel cells, inexpensive, and exhibiting excellent power production capacity and durability even under high temperature/low humidity conditions, and also provides a polymer electrolyte fuel cell which incorporates the same electrode structure. The present invention also provides an elec. device and transportation device, each incorporating the same polymer electrolyte fuel cell. The electrode structure comprises a pair of electrode catalyst layers, each containing a catalyst supported by carbon particles, and polymer electrolyte membrane placed between these electrode catalyst layers. The polymer electrolyte membrane is of a sulfonated polyarylene composed of 0.5 to 100% by mol of the first repeating unit represented by (I) and 0 to 99.5% by mol of the second repeating unit represented by (II): (wherein, A is a divalent organic group; and a benzene ring includes its derivative; -W- is a divalent electron attracting group; - T- is a divalent organic group; and R1 to R8 are a hydrogen atom or fluorine atom, an alkyl group, fluorine-substituted alkyl group, allyl group, aryl group or cyano group, and may be the same or different).

IT 663920-23-8P, Benzenesulfonic acid, 4-[4-(2,5-dichlorobenzoyl)phenoxy]-, sodium salt
RL: SPN (Synthetic preparation); PREP (Preparation)
(electrode structure for polymer electrolyte fuel cells)

RN 663920-23-8 HCAPLUS

CN Benzenesulfonic acid, 4-[4-(2,5-dichlorobenzoyl)phenoxy]-, sodium salt (1:1) (CA INDEX NAME)



IC ICM H01M008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT 122325-09-1P 663920-23-8P, Benzenesulfonic acid, 4-[4-(2,5-dichlorobenzoyl)phenoxy]-, sodium salt 663920-24-9P,

4-[4-(2,5-Dichlorobenzoyl)phenoxy]benzenesulfonyl chloride
690247-88-2P 690247-89-3P
RL: SPN (Synthetic preparation); PREP (Preparation)
(electrode structure for polymer electrolyte fuel cells)

II

> d l61 1-2 bib abs hitstr hitind

L61 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2007:116631 HCAPLUS Full-text
DN 146:209689
TI Organic-inorganic hybrid catalyst layer for fuel cell
IN Kawai, Junji; Otsuki, Toshitaka; Fukuda, Kaoru; Takahashi, Ryoichiro; Shinkai, Hiroshi
PA Jsr Ltd., Japan; Honda Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 20pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007026775	A	20070201	JP 2005-204608	200507 13

PRAI JP 2005-204608 20050713

AB The title catalyst layer comprises catalyst loaded C particles; a sulfonic acid group-containing polyarylene which consists of a 1st structure unit represented by C6H3Y(C6H4Z)m(C6H4-k(SO3H)kZ)nAr [Y is ≥1 structure selected from CO, SO2, SO, CONH, COO, (CF2)l (l = integer 1-10), and C(CF3)2; Z = direct bond or ≥1 structure selected from (CH2)l (l = integer 1-10), O, and S; Ar = aromatic group having substituent represented by SO3H, O(CH2)pSO3H, or O(CF2)pSO3H; p = integer 1-12; m = integer 0-10; n = integer 0-10; and k = integer 1-4] and a 2nd structure unit represented by [(C6R1R2R3R4D)sC6R5R6R7R8B(C6R9R10R11R12A)tC6R13R14R15R16B]r(C6R1R2R3R4D)sC6R5R6R7R8 [A, D = direct bond, or ≥1 structure selected from O, S, CO, SO2, SO, CONH, COO, (CF2)ll (l = integer 1-10),(CH2)ll (l = integer 1-10), CR172 (R17 = aliphatic hydrocarbon, aromatic hydrocarbon, and halogenated hydrocarbon group), cyclohexylidene, and fluorenylidene group; B = O or S; R1-16 is ≥1 atom or group selected from H, F, (halogenated) alkyl, allyl, aryl, nitro, and nitrile

group; s,t = integer 0-4; and r = 0 or integer ≥1]; and a metalloxane polymer.

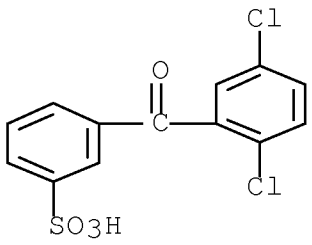
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(electrode catalyst layers containing sulfonated polyarylene for fuel cells)
RN 7440-06-4 HCAPLUS
CN Platinum (CA INDEX NAME)

Pt

IT 917252-67-6
RL: TEM (Technical or engineered material use); USES (Uses)
(electrode catalyst layers containing sulfonated polyarylene for fuel cells)
RN 917252-67-6 HCAPLUS
CN Benzenesulfonic acid, 3-(2,5-dichlorobenzoyl)-, polymer with bis(4-chlorophenyl)methanone, 1,1'-sulfonylbis[4-chlorobenzene] and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis[phenol] (CA INDEX NAME)

CM 1

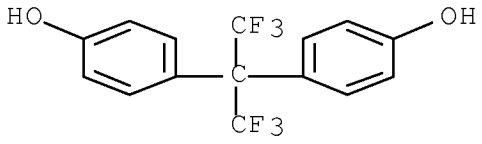
CRN 873815-38-4
CMF C13 H8 Cl2 O4 S



CM 2

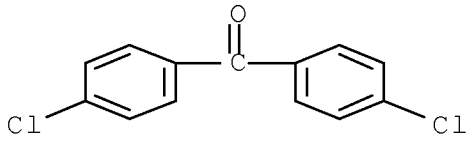
CRN 1478-61-1

CMF C15 H10 F6 O2



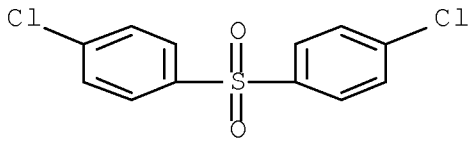
CM 3

CRN 90-98-2
CMF C13 H8 Cl2 O



CM 4

CRN 80-07-9
CMF C12 H8 Cl2 O2 S



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(electrode catalyst layers containing sulfonated polyarylene for fuel cells)
IT 917252-67-6

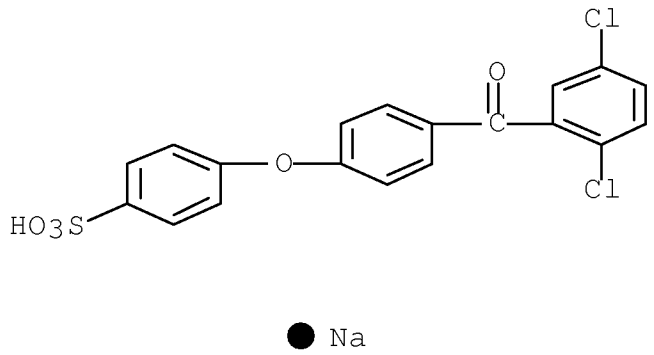
RL: TEM (Technical or engineered material use); USES (Uses)
(electrode catalyst layers containing sulfonated polyarylene for fuel
cells)

L61 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2005:1103231 HCAPLUS Full-text
DN 143:389771
TI Polymer electrolyte fuel cell
IN Fukuda, Kaoru; Eguchi, Taku; Tsuji, Makoto
PA Honda Motor Co., Ltd, Japan
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20050227138	A1	20051013	US 2005-98425	20050405
	JP 2005302339	A	20051027	JP 2004-112673	20040407
	JP 4116585	B2	20080709		
PRAI	JP 2004-112673	A	20040407		

AB A polymer electrolyte fuel cell consists of plural units, and the unit has an anode side separator, an anode diffusion layer, an anode catalytic layer, polymer electrolyte membrane, a cathode catalytic layer, a cathode diffusion layer, and a cathode side separator. The cathode catalytic layer further includes a catalyst in which platinum or platinum alloy is supported on a carbon supporting body having an average lattice space of [002] surface of 0.338 to 0.355 nm and sp. surface area of the supporting body of 80 to 250 m2/g, electrolyte containing ion exchange resin, and vapor grown carbon fiber. Furthermore, a water holding layer containing ion exchange resin, carbon particles, and vapor grown carbon fiber is arranged at an interface of the cathode diffusion layer and the cathode catalytic layer.

IT 663920-23-8P
RL: SPN (Synthetic preparation); PREP (Preparation)
(polymer electrolyte fuel cell)
RN 663920-23-8 HCAPLUS
CN Benzenesulfonic acid, 4-[4-(2,5-dichlorobenzoyl)phenoxy]-, sodium salt (1:1) (CA INDEX NAME)



IC ICM H01M004-94
ICS H01M004-96; H01M008-10
INCL 429042000; 429044000; 429033000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(particles; polymer electrolyte fuel cell)
IT 69266-28-0P 663920-23-8P 663920-24-9P 663920-25-0P
663920-27-2P
RL: SPN (Synthetic preparation); PREP (Preparation)
(polymer electrolyte fuel cell)

=> d l5 1-5 bib abs hitstr hitind
L5 HAS NO ANSWERS
L5 SCR 2043

=> d l56 1-5 bib abs hitstr hitind

L56 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859827 HCAPLUS Full-text
DN 149:157223
TI Polymer electrolyte membrane/catalyst assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF
DT Patent

LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2008166050	A	20080717	JP 2006-352397	200612 27
PRAI	JP 2006-352397		20061227		

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The MEA contains a polymer electrolyte membrane comprising (1) a polymer represented by the general formula I [n1, n2, m1-m3 = ≥1-integer satisfying n1/(n + n2) = 0.40-0.70, m3/(m1 + m2 + m3) = 0.005-0.05, and m2/(m1 + m2 + m3) = 0.01-0.20] and (2) 5-15% of a polymer II [n3 = ≥1-integer; m4, m5 = ≥1-integer satisfying m5/(m4 + m5) = 0.60-0.80] and an electrode catalyst layer which is bonded directly at least on one side of the polymer electrolyte membrane, where the surface roughness of the membrane/catalyst interface is ≤1 μm. The MEA is prepared by direct application of a catalyst slurry containing an electrode catalyst, a polymer electrolyte and a solvent at least on one side of the polymer electrolyte membrane containing the polymer I and 5-15% of the polymer II in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm. The hydrogen-fueled polymer electrolyte fuel cell shows high output performance even in low moisturizing condition and also shows excellent durability.

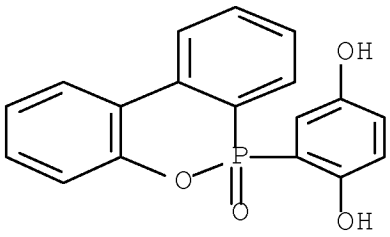
IT 1027300-88-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)

RN 1027300-88-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

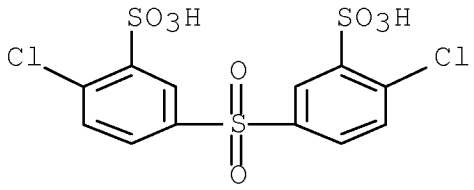
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

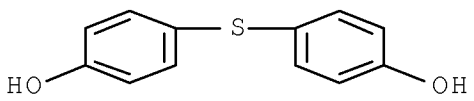
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

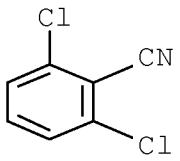
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



CM 4

CRN 1194-65-6
CMF C7 H3 Cl2 N



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 861709-53-7P, 2,5-Dicarboxybenzenesulfonic acid monosodium salt-3,5-dicarboxyphenylphosphonic acid-3,3',4,4'-tetraaminodiphenylsulfone copolymer 1027300-88-4P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(platinum/carbon electrode catalyst layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

L56 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859826 HCAPLUS Full-text
DN 149:180166

TI Polymer electrolyte membrane/catalyst assembly, its manufacture, and hydrogen-fueled fuel cell

IN Yamashita, Masahiro; Kitamura, Kota; Yamaguchi, Hiroki; Yamada, Takatoshi; Shimizu, Yusuke; Miyagawa, Shinji

PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 16pp.
CODEN: JKXXAF

DT Patent

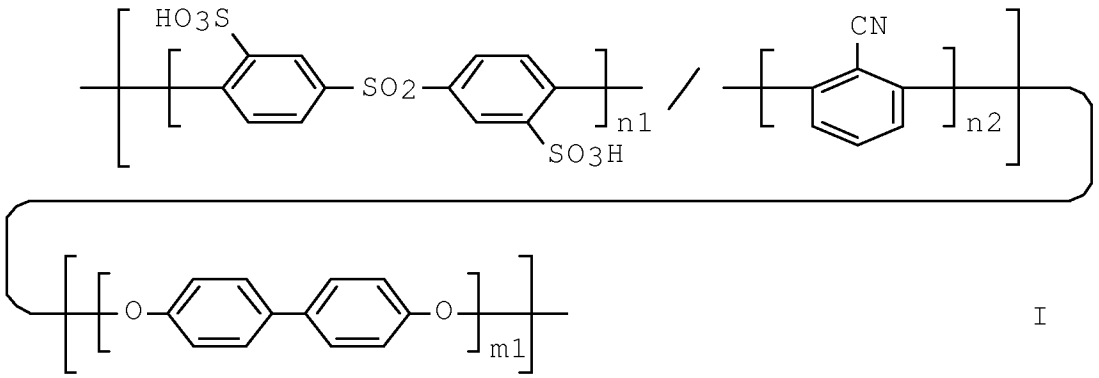
LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008166049	A	20080717	JP 2006-352389	20061227

PRAI JP 2006-352389 20061227

GI



I

AB The polymer electrolyte membrane/catalyst assembly contains (1) a polymer electrolyte membrane which contains a polymer I (n1, n2 = ≥1-integer satisfying n1/(n1 + n2) = 0.40-0.70; m1 = ≥1-integer) and shows coefficient of linear expansion at 150-200° (TGA, in N3, 30-min dry at 25° followed by heating at 5°/min to 350°) in a predetd. range and (2) an electrode catalyst layer which is bonded directly on at least one side of the polymer electrolyte membrane and has been formed by direct application of a catalyst slurry containing Pt/C

powder, ionomers, and solvent in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm.

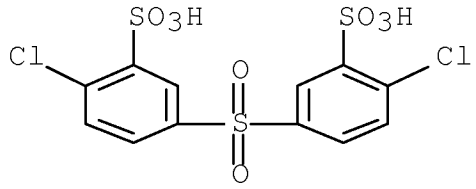
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

RN 681035-31-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

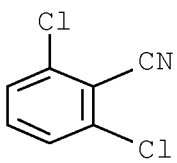
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

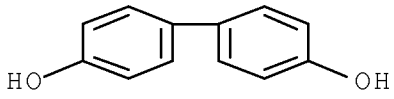
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 92-88-6
CMF C12 H10 O2



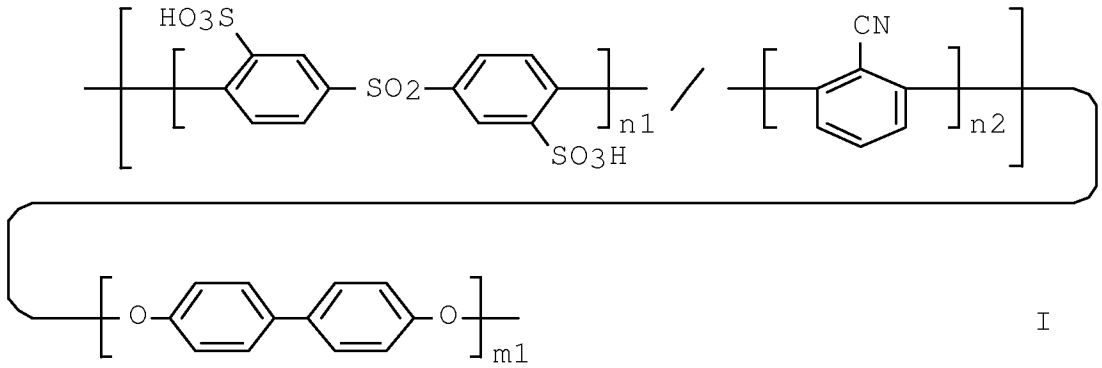
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(Pt/carbon electrode catalyst layer ; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

III

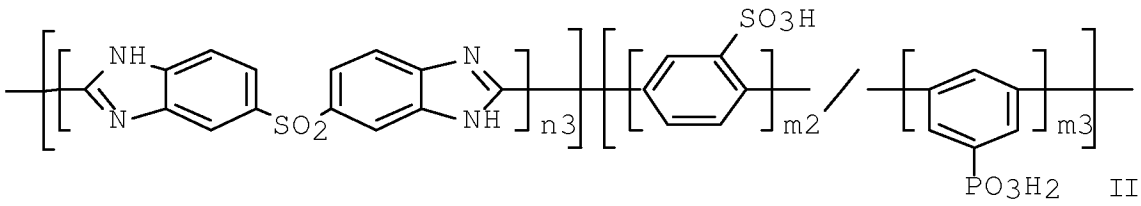
L56 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859823 HCAPLUS Full-text
DN 149:180165
TI Polymer electrolyte membrane/catalyst assembly, its manufacture, and hydrogen-fueled fuel cell
IN Sakaguchi, Yoshimitsu; Kitamura, Kota; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 15pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2008166037	A	20080717	JP 2006-352154	20061227

PRAI JP 2006-352154 20061227
GI



I



II

AB The polymer electrolyte membrane/catalyst assembly contains (1) a polymer electrolyte membrane which is composed of 85-95% of a polymer I (n1, n2 = ≥1-integer satisfying n1/(n1 + n2) = 0.40-0.70; m1 = ≥1-integer) and 5-15% of a polymer II (n3 = ≥1-integer; m2, m3 = ≥1 integer satisfying m3/(m2 + m3) = 0.60-0.80) and (2) an electrode catalyst layer which is bonded directly on at least one side of the polymer electrolyte membrane and has been formed by direct application of a catalyst slurry containing electrode catalysts, polymer electrolytes, and solvents in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm.

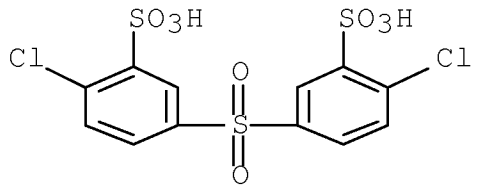
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

RN 681035-31-4 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol and 2,6-dichlorobenzonitrile (CA INDEX NAME)

CM 1

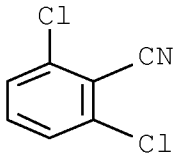
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

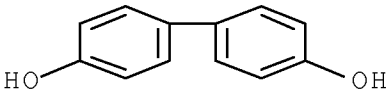
CM 2

CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 3

CRN 92-88-6
CMF C12 H10 O2



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(Pt/carbon electrode catalyst layer ; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 681035-31-4P, 4,4'-Biphenol-2,6-dichlorobenzonitrile-3,3'-disulfo-4,4'-dichlorodiphenylsulfone disodium salt copolymer
861709-53-7P, 2,5-Dicarboxybenzenesulfonic acid monosodium

salt-3,5-dicarboxyphenylphosphonic acid-3,3',4,4'-tetraaminodiphenyl sulfone copolymer
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells)

L56 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2008:859822 HCAPLUS Full-text
DN 149:157283
TI Polymer electrolyte membrane/electrode assembly (MEA), its manufacture, and its hydrogen-fueled polymer electrolyte fuel cells
IN Kitamura, Kota; Sakaguchi, Yoshimitsu; Yamaguchi, Hiroki; Yamashita, Masahiro; Yamada, Takatoshi; Takase, Satoshi; Miyagawa, Shinji
PA Toyobo Co., Ltd., Japan; Nissan Motor Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 14pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2008166036	A	20080717	JP 2006-352148	200612 27
PRAI JP 2006-352148		20061227		

GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The MEA contains a polymer electrolyte membrane comprising a polymer represented by the general formula I [n1, n2 , m1-m3 = ≥1-integer satisfying n1/(n + n2) = 0.40-0.70, m3/(m1 + m2 + m3) = 0.005-0.05, and m2/(m1 + m2 + m3) = 0.01-0.20] and an electrode catalyst layer which is bonded directly at least on one side of the polymer electrolyte membrane, where the surface roughness of the membrane/catalyst interface is ≤1 μm. The MEA is prepared by direct application of a catalyst slurry containing an electrode catalyst, a polymer electrolyte and a solvent at least on one side of the polymer electrolyte membrane of a polymer I in such a way that the surface roughness of the membrane/catalyst interface becomes ≤1 μm. The

hydrogen-fueled polymer electrolyte fuel cell shows high output performance even in low moisturizing condition and also shows excellent durability.

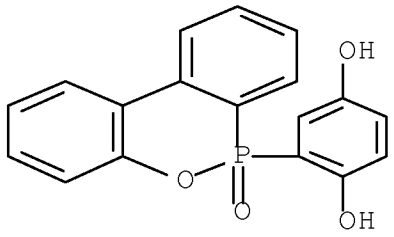
IT 916849-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)

RN 916849-47-3 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-chloro-, sodium salt (1:2), polymer with [1,1'-biphenyl]-4,4'-diol, 2,6-dichlorobenzonitrile, 2-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1,4-benzenediol and 4,4'-thiobis[phenol] (CA INDEX NAME)

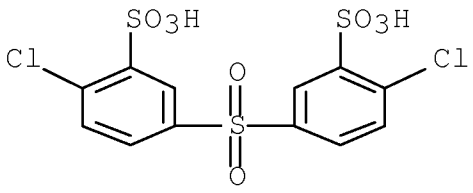
CM 1

CRN 99208-50-1
CMF C18 H13 O4 P



CM 2

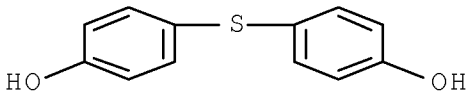
CRN 51698-33-0
CMF C12 H8 Cl2 O8 S3 . 2 Na



●2 Na

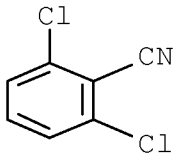
CM 3

CRN 2664-63-3
CMF C12 H10 O2 S



CM 4

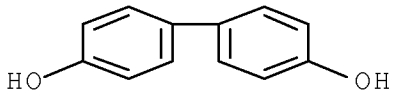
CRN 1194-65-6
CMF C7 H3 Cl2 N



CM 5

CRN 92-88-6

CMF C12 H10 O2



CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Vulcan XC 72R, gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 354114-33-3, TGP-H 060
RL: TEM (Technical or engineered material use); USES (Uses)
(gas diffusion layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)
IT 916849-47-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(manufacture of polymer electrolyte membrane/electrode assembly for
hydrogen-fueled polymer electrolyte fuel cells)
IT 7440-06-4, Platinum, uses 7440-44-0, Carbon, uses
RL: CAT (Catalyst use); USES (Uses)
(platinum/carbon electrode catalyst layer; manufacture of polymer electrolyte membrane/electrode assembly for hydrogen-fueled polymer electrolyte fuel cells)

L56 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2008 ACS on STN
AN 2006:117649 HCAPLUS Full-text
DN 144:195256
TI Polymer electrolyte fuel cell
IN Saito, Shin; Iwasaki, Katsuhiko
PA Sumitomo Chemical Co., Ltd., Japan
SO Can. Pat. Appl., 41 pp.
CODEN: CPXXEB
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI CA 2513518 A1 20060130 CA 2005-2513518 200507 26
EP 1626453 A2 20060215 EP 2005-106807 200507 25
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU
JP 2006066391 A 20060309 JP 2005-217020 200507 27
US 20060280999 A1 20061214 US 2005-189723 200507 27
KR 2006048879 A 20060518 KR 2005-69036 200507 28
PRAI JP 2004-223434 A 20040730

AB The invention concerns a polymer electrolyte fuel cell comprising: a solid polymer electrolyte membrane containing an aromatic polymer electrolyte; an electrode comprising a catalyst layer and a gas diffusion layer as an anode and a cathode to be joined on both surfaces of this solid polymer electrolyte membrane; a gas sealing material to be disposed in a periphery of the gas diffusion layer; and a separator having a reaction gas flow field; wherein the gas diffusion layer surrounds the whole outer edge of the gas flow field of the separator and has a larger area than an area occupied by the outer edge of the gas flowfield of the separator is provided.

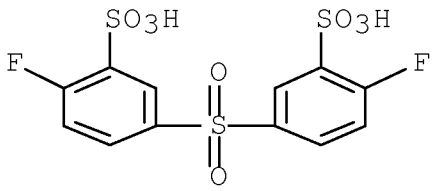
IT 875098-09-2P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte fuel cell)

RN 875098-09-2 HCAPLUS

CN Benzenesulfonic acid, 3,3'-sulfonylbis[6-fluoro-, dipotassium salt, polymer with 2,5-dihydroxybenzenesulfonic acid, 1,1'-sulfonylbis[4-fluorobenzene] and 4,4'-sulfonylbis[phenol] (9CI) (CA INDEX NAME)

CM 1

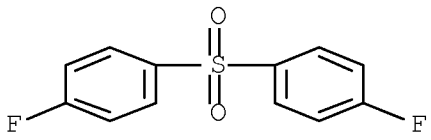
CRN 816417-98-8
CMF C12 H8 F2 O8 S3 . 2 K



● 2 K

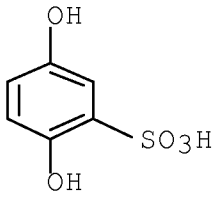
CM 2

CRN 383-29-9
CMF C12 H8 F2 O2 S



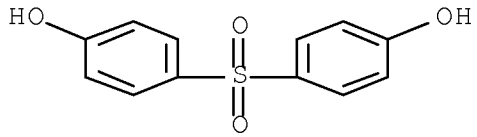
CM 3

CRN 88-46-0
CMF C6 H6 O5 S



CM 4

CRN 80-09-1
CMF C12 H10 O4 S



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT 24938-68-9P 875098-09-2P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(polymer electrolyte fuel cell)

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